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### PERTH, AUGUST, 1948—(*Continued*)

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## Section of Ophthalmology.[1]

*President*: J. Bruce Hamilton, M.B., Ch.M., D.O., D.O.M.S., F.R.A.C.S., Tasmania.

*Vice-Presidents*: N. M. Gregg, M.C., M.B., Ch.M., F.R.A.C.S., D.O.M.S., New South Wales; G. H. B. Black, M.B., B.S., D.O.M.S., F.R.A.C.S., South Australia; A. S. Anderson, M.B., Ch.B., D.O.M.S., F.R.A.C.S., Victoria; C. Morlet, D.S.O., M.B., B.S., F.R.A.C.S., Western Australia.

*Honorary Secretary*: J. L. Day, M.B., B.S., Western Australia.

### President's Address.

J. BRUCE HAMILTON (Hobart) took as the subject of his presidential address John Cunningham Saunders. He began by outlining the world situation at the beginning of the nineteenth century, when Napoleon was paramount in Europe, and when the Australian colonies were being founded at the other end of the world to forestall the expansion of his colonial empire. The unsatisfactory state of ophthalmology at the end of the eighteenth century was also mentioned. Into that picture entered John Cunningham Saunders, who, under the ægis of Sir Astley Cooper, founded the first eye hospital in London in 1804. He had two colleagues associated with him in the work, John Richard Farre and Richard Battley, who were fellow anatomists at Guy's Hospital. Saunders was born on October 10, 1773, and in 1795 he moved to London and dissected under Sir Astley Cooper, whom he followed as demonstrator in anatomy. Richard Farre was born in Barbados in 1775 and went to London in 1792 to finish his studies. Battley was born in 1770 and did not go to London until 1795, to study at Guy's Hospital. On October 1, 1804, Saunders, at Cooper's instigation, published a proposal for the institution of a "Dispensary for the Poor Afflicted with Disease of the Eye and Ear". Attached to the proposal was a testimonial of approbation from the physicians and surgeons of Saint Thomas's and Guy's Hospitals. On January 4, 1805, a meeting at the City Coffee House followed the proposal and a resolution setting up the dispensary was passed. It took effect on March 25 in the same year. In 1808 the name of the hospital was changed from "The London Dispensary for the Relief of the Poor Afflicted with Disease of the Eye and Ear" to "The Infirmary for Curing Diseases of the Eye". In January, 1810, Saunders published a medical report, which was illuminating, and showed the progress which the hospital had made during six years. Unfortunately, that year Saunders died from cerebral hæmorrhage, and his place was taken by Benjamin Travers; John Farre still remained a physician at the hospital, and Battley its secretary. A few years later Farre published a "Treatise on Some Practical Points Relating to Diseases

[1] The meetings of the Section of Ophthalmology with the Section of Neurology and Psychiatry and the Section of Medicine have already been recorded.

of the Eye", which had been prepared by Saunders before his death. In the second edition of that work, published in 1816, Farre gave an outline of the life of Saunders, which commented on his work, and a detailed account of the post-mortem examination on Saunders performed by Astley Cooper. After Saunders's death, much controversy arose as to the originator of the needling operation for congenital cataract; but after considerable acrimonious discussion, a special report was issued at the hospital, stating officially that John Cunningham Saunders was the originator of the operation. Dr. Hamilton said that Saunders's needle for discission was frequently used in present-day ophthalmology. The author referred to other ophthalmic activities in both London and Exeter during the first two decades of the nineteenth century, and then briefly described the progress of the hospital which Saunders had started. In 1822 the hospital was moved from its original site at Charterhouse Square to Moorfields, under the name of "The London Ophthalmic Infirmary". Finally, in 1837, it changed its name for the fourth time to "The Royal London Ophthalmic Hospital", by which name it became world-renowned. Dr. Hamilton, in conclusion, said that the works of reference from which he had quoted extensively should in themselves make pleasurable and instructive reading.

### Rubella Retinitis in Tasmania.

J. BRUCE HAMILTON (Hobart) presented a paper by himself in association with FRANK PHILLIPS, C. R. PALFREYMAN and D. H. WATERWORTH on the subject of rubella retinitis in Tasmania. The clinical material consisted of 46 deaf children at the Tasmanian Institute for the Blind, Deaf and Dumb; in no less than 29 cases was the deafness due to rubella in the mother during pregnancy. Of those 29 children, 13 had retinitis, varying in extent from fine pigmentary stippling to gross pigmentary and colloid changes with waxy disks. The 13 children presented other congenital ocular defects such as nystagmus, anisocoria and cataract, while the remaining 16 children deaf as a result of maternal rubella and without retinitis had no congenital ocular abnormalities. The 17 other deaf children, whose deafness was not due to maternal rubella, also had no congenital ocular abnormalities. Dr. Hamilton also drew attention to the theory, based on the known facts about viruses, that the 1938 epidemic of rubella might have been due to mutation of the virus. The main hope for the community, if that assumption was correct, was that the mutated virus of rubella would mutate again and lose its affinity for embryonic tissue.

G. H. BARHAM BLACK (Adelaide), in opening the discussion, explained that the short time at his disposal, since Dr. Macindoe's inability to attend the meeting had been known, had prevented him from doing full justice to the matter. However, he had prepared some notes on which to base his remarks. In the first place, he complimented Dr. Hamilton and his co-workers in Tasmania on the paper which those present had just heard, and particularly on the beautiful series of paintings of the retina of six patients. Dr. Black had no doubt that some of those coloured plates depicting the ophthalmoscopic appearances found in rubella retinitis would find a place in future atlases of fundus conditions. Dr. Black, on behalf of the South Australian members of the Ophthalmological Society of Australia, said that he felt ashamed of their failure to tackle, in the thorough manner which had been shown by their Tasmanian colleagues, the task of routine ocular examination of children deaf as the result of maternal rubella. That failure, however, was in no way due to unwillingness. Speaking for himself, he had felt keen anticipation at the prospect of making the survey suggested by Dr. Phillips, honorary secretary of the Prevention of Blindness Committee; but it had been found on investigation that no roll of deaf post-rubella children was available, Dr. Swan having apparently taken all his data with him to England, and subsequently it had been decided to defer the survey until Dr. Swan's return to Australia. It was interesting to trace the course of events in the German measles story. In 1942, Dr. N. M. Gregg had read his first paper to the society at its annual meeting in Melbourne. At that time cases had been identified in Sydney, Melbourne and Adelaide; but the only pathological conditions recognized at that stage were congenital cataract, heart disease, microcephaly, mental retardation and poor physical development generally. After the reading of that paper some of the ophthalmologists in South Australia had begun to consider the position of the medical profession should cases of post-rubella disease continue to occur, and when that actually happened the investigations in South Australia were started with Dr. Swan in charge, working with a grant from the National Health and Medical Research Council. The primary object of the investigation was to discover just what risk of maldevelopment of the embryo was present when the mother contracted rubella in the early stage of pregnancy. That aspect of the question was subsequently somewhat submerged by other data; but it was not forgotten, and the answer was given, in accordance with the findings, as approximately 100% risk if rubella occurred in the first two months of pregnancy. It was during the investigation preceding the first paper by Swan *et alii* that the incidence of deaf children was noted by Tostevin in Adelaide and also independently by Gregg in Sydney. Then in 1946, at the annual meeting of the Ophthalmological Society of Australia in Melbourne, E. O. Marks read a paper concerning the incidence of retinitis in post-rubella deaf children in Queensland. Dr. Hamilton had that morning compared his survey in Tasmania with that of Marks, and had shown that the two series were in close parallel. There were two particularly important aspects of Dr. Hamilton's paper. The first was the matter of mutation of viruses and the resultant effect of such mutation on embryos born of mothers infected with rubella in the early months of pregnancy. The second was the production of the excellent permanent pictorial record of fundus appearances which had just been seen. Dr. Black deprecated his inability to produce any comparable report of fundus appearance owing to the absence of a routine survey in South Australia; but mentioned a few cases which had been picked up accidentally. He also mentioned a child with defective iris structure and resultant polycoria who had come under his care, and in conclusion again thanked Dr. Hamilton and his colleagues for their contribution to the growing literature on this post-rubella syndrome.

CEDRIC COHEN (Sydney) asked Dr. Hamilton whether he had seen patients with rubella retinitis which was not associated with deafness. In Sydney he (Dr. Cohen) had seen two patients whose condition had been thought possibly to be due to rubella retinitis.

F. B. WALSH (United States of America) said that he knew the paper was an important one on a matter of great interest. Dr. Hamilton's idea of mutations of the virus was likely to have great importance. All the fundus pictures struck him (Professor Walsh) with their resemblance to *retinitis pigmentosa*, and the associated defects in the children were also those associated with *retinitis pigmentosa*. In that disease they noted an atypical series together with all sorts of neurological combinations. They had a retinal picture associated with hemiplegia, mental deficiency and other bodily defects. It seemed to him of the greatest importance to see what was going to happen when the children grew up and reproduced. They would not know the full effects till then. He had not given consideration to that aspect before.

J. Bruce Hamilton (Hobart), in reply, referred to the lack of response to pursue research in the matter in the other States, and said that South Australia was the only State that had answered his circular letter. Cases had been reported of unilateral cataract with retinitis in the other eye and without deafness, but all his cases had occurred in deaf children. It did appear that the same structures were being attacked as in *retinitis pigmentosa*. He had reviewed some children after one year and found no further progress in the disease; they were too young for the fields of vision to be estimated. It was hoped to examine the fields before they left the blind institution at the age of sixteen years—eight years ahead. By then one would have an idea whether the disease was progressive.

His opinion so far was that it was a stationary disease attacking some part of the retina—the retinal pigment.

### Results with Contact Lenses.

DARCY WILLIAMS (Sydney) read a paper on results obtained with contact lenses. He said that the report, which related to 118 unselected patients fitted with contact lenses in the year 1946, was based on replies received in response to a *questionnaire* sent to patients. Patients with keratoconus numbered 47, and those with delayed mustard gas keratitis, 24. Results in bilateral keratoconus were 71% successful and in mustard gas keratitis, 45%. The conclusion was reached that persons with abnormal sensitivity of the eyes, asthma, hay fever and allergic conditions of the conjunctiva were unsuitable for contact lenses. Attention was directed to the difficulties of providing a satisfactory lens in instances of monocular aphakia when the other eye was normal, and to the problem of corneal œdema, which had not been entirely solved. Improvements in types of contact lenses were mentioned.

J. BRUCE HAMILTON (Hobart) said that, as both Dr. Darcy Williams and Dr. Butcher lived in Sydney, he would like to see Dr. Williams's ability at the work diffused over the rest of Australia, so that the benefit of a contact lens service would be available for the other States. Patients had not the means to permit of their reporting every twelve months in Sydney as they should do. His opinion had been that in case of keratoconus the resulting pressure of the contact lens would slow up its progress; but it now seemed that the contact lens was an irritant and accelerated the progress of the condition—it was an aggravating factor rather than a deterrent. He doubted the advisability of ordering contact lenses in unilateral keratoconus. Concerning dry eyes in repatriation cases due to mustard gas, Dr. Hamilton asked whether it was the view that the lens protected the cornea, so that the dry cornea eyes did well and the moist eyes not so well. He would like to hear from Dr. Williams more about mustard gas keratitis and tear secretion. He again strongly urged a dispersal of the excellent contact lens work over the other States.

CLIFFORD COLVIN (Orange, New South Wales) said that he was appalled to find some of the more unscrupulous opticians carrying on a money-making stunt from the supply of contact lenses. He was pleased that ophthalmologists had with them someone who was investigating the matter scientifically and was giving his results. Dr. Colvin had worked with Dallos in London and had come to consider Zeiss lenses as unsatisfactory. He had learnt Dallos's method fairly well. He referred the cases he had to Dr. Williams. With regard to mustard gas cases, he had seen one patient who developed a large corneal ulcer, which was satisfactorily treated with "Albucid" (10% solution). Another man had developed an ulcer, and had gone back to satisfactory work wearing a contact lens. With regard to myopia, Dr. Colvin had had one patient with keratoconus—a schoolboy, aged twelve years—who was happy wearing contact lenses. Dr. Colvin's impression was that contact lenses did not influence progress one way or the other, the basic defect being the thinning of the central part of the cornea which gave way with the intraocular pressure. When a unilateral contact lens was ordered, one had to consider whether the patient would develop binocular vision and whether it was worth while. Dr. Colvin wished to emphasize that it was necessary to select the right type of case. The public had a knowledge obtained from popular periodicals, and asked to have contact lenses prescribed. The policy must be to prescribe contact lenses only in selected and suitable cases.

CEDRIC COHEN (Sydney) wished to emphasize the fortunate position in Sydney. He quoted a case in which the cornea had been inadvertently painted with 50% silver nitrate solution, and in which treatment later with a contact lens satisfactorily prevented symblepharon; in that case a contact lens with a large scleral flange was used. Dr. Cohen had had the experience of operating for glaucoma on an eye that had worn a contact lens for three years. In the trephining he had cut into hard conglomerated tissue which on section showed no definite structure, so that it was impossible to perform the usual operation. He agreed with Dr. Colvin on the use of "Albucid" in mustard gas keratitis, but had found in a large number of cases that "Albucid" irritation occurred. He had used 30% solution for four days and even 15% solution produced some irritation. Dr. Cohen also quoted the case of a young man who with contact lenses had passed all vision tests into the air force until he met an ophthalmologist who everted his eyelids.

S. R. GERSTMAN (Melbourne) was confident that the interests of the public would be best served if that form of treatment remained in the hands of oculists. In other hands the treatment might be so abused that it would fall into disrepute and not be sought by those patients to whom it would be a godsend. He asked whether it was necessary in mustard gas keratitis to continue wearing the contact lens always, or whether the cornea would remain healthy if its use ceased.

G. H. BARHAM BLACK (Adelaide) said that he had in 1945 spent a week in Sydney with Dr. Williams at his clinic and had seen his technique for the individually moulded lenses, but had then realized the difficulty which would be entailed in trying to carry out the method in South Australia. As a result, after discussion with Dr. Williams, he had used fitting shields of the Zeiss type, which had been made available through the courtesy of Optical Prescriptions Proprietary, Limited. Some satisfactory results had been obtained by those means; but failure was experienced in others because the 12·0 millimetre corneal cord was too small. Later on a further selection of fitting shields had been made available with a 13·0 millimetre cord, and the latest development had been several further lenses with a 12·0 or 13·0 millimetre scleral radius—a non-spherical or astigmatic shape. They seemed to offer hopes of benefiting patients for whom satisfactory scleral fit was unobtainable by the earlier type of lens. With regard to myopes and similar subjects with refractive errors for whom good visual acuity was obtainable by ordinary spectacle lenses, he had used his utmost efforts to discourage the use of contact lenses, which he felt sure would not be used and would be an expense to the patient without corresponding benefi..

F. B. WALSH (United States of America) said that he had not a great deal to add, except to congratulate the people in Australia for having Dr. Williams, who was in the position of acting as referee for those patients. Professor Walsh did not do the actual fitting himself. He always advised myopes not to consider wearing contact lenses; if they persisted his relations with them terminated. Conical cornea was the condition must benefited, and he would say that in that class of work contact lenses found their true usefulness. He was keen on corneal transplants in such cases. They were the ideal cases, in which most beautiful results were obtained. As a form of treatment to keep the lids away from the cornea, he was impressed with its usefulness. In a couple of cases of aphakia he had tried contact lenses as an aid to binocular vision, but the patients had decided to go ahead with their one eye. The method of tackling the problem in Australia was ideal. Dr. Williams would be able to set forth precisely the indications for contact lenses.

Darcy Williams (Sydney), in reply, said that with regard to ex-servicemen, he would soon be able to make contact lenses readily available; but he would appreciate the help of a young ophthalmologist able to devote two afternoons a week to the work. Some definite information on tear secretion would be prepared in the near future. He thought that attending to possible deficiencies of vitamins *A* and *K* in keratoconus cases was worth while. To Dr. Colvin, Dr. Williams said that he deprecated any commercial interference in the matter. He was interested to hear the cautionary note on the use of "Albucid". A contact lens that did not press too tightly was best. In reply to Dr. Cohen's question about his patient with glaucoma, Dr. Williams thought that adherence of the superficial tissues to the globe was associated with inflammation over some years rather than the effect of a contact lens. To Dr. Gerstman, Dr. Williams said that he did not

think that mustard gas keratitis patients would be able to give up their contact lenses, as they mostly used them for vision. He thought they would still want to wear them. With regard to channels and holes in the contact lens, he said that ordinarily there was a fluid layer between the back of the lens and the cornea. Dallos had fitted the lens so that there was only a fine capillary layer of fluid. When a hole was put at the limbus, a bubble of air formed and ran around and was annoying. It was possible to groove the undersurface of the scleral segment so that tears could run in and out. A good fitting of the scleral segment was very important.

### Recurrent Intraocular Hæmorrhage.

F. J. B. MILLER (Adelaide) read a paper on the subject of recurrent intraocular hæmorrhage. He said that the disease most frequently attacked young men in their early twenties, though it sometimes occurred in women and in older persons. The patient noticed a sudden loss of vision in an eye, either slight or complete; the attacks occurred at irregular intervals. In many cases good vision returned with absorption of the blood; but after recurrences absorption became slower and less complete, the blood being replaced by fibrous tissue (*retinitis proliferans*). Detachment of the retina might follow, or secondary glaucoma might set in with or without irido-cyclitis and the eye might be lost. In other cases the hæmorrhages ceased and useful vision was recovered. The course of the disease might extend over many years. The cause had been found to be retinal periphlebitis, which was usually tuberculous, but the condition might be due to other infections. The vessels most affected were the peripheral retinal veins, though the larger trunks might be affected. Treatment was not very satisfactory. Rest in bed might be advisable if the hæmorrhage had been severe, but most patients did better going about, though avoiding strenuous exertion. Good food and general tonics might be of help, and the patient should live under the best conditions possible. A complete blood examination should be made, tuberculin tests should be carried out and septic foci should be sought. However, in most cases a tuberculosis *régime* was necessary, even if no evidence of tuberculosis could be found. A long course of tuberculin therapy could be given, a start being made with small doses and the course being interrupted if any sign of a reaction occurred. Rutin and streptomycin might also be tried. If glaucoma supervened, some operative treatment seemed indicated, but the outlook was not good. It seemed that nothing could be done for the patients with detachment of the retina. A number of patients ceased to have hæmorrhages and fair eyesight returned; but some went blind, and if that seemed likely to occur they should be taught braille or some trade before becoming helpless.

S. R. GERSTMAN (Melbourne) said that Dr. Miller had stimulated their awareness of a very well-established condition. To him the difficulties of the subject were associated with ætiology, with prognosis and with treatment. With regard to ætiology, the condition was now recognized as being an allergic manifestation in the eye from a chronic low-grade tuberculous lesion, such as a tuberculous gland in the hilum of the lung. A Mantoux test was necessary, but the absence of a positive reaction did not in his opinion constitute an indication for a course of tuberculin. The fact that the greatest number of cases occurred in young and apparently healthy adult males added to the difficulty. That was the age of the greatest economic distress with the future of the patient at stake. The prognosis was extremely difficult; as was well known, in some cases hæmorrhage might occur repeatedly for years with no permanent damage, but on the other hand the blood might not all be absorbed. The patient might in the end become blind as a result of hæmorrhage and its complications. Concerning treatment, Dr. Gerstman still attached great importance to tuberculin, being careful to avoid any systemic reaction. In the absence of a response to the Mantoux test, it was a great help. Potassium iodide still had its place in treatment, and the new drug rutin might be useful. At the Royal Melbourne Hospital recently it had been found that X rays would possibly be of assistance in that distressing condition. Dr. Kaye Scott would give all the details from the radiologist's side.

R. Kaye Scott (Melbourne) said that he appreciated particularly the exposition of the pathological processes which Dr. Miller had made so clear. While the ætiology was still a matter of uncertainty, with a distinct possibility that a tuberculous basis might be the origin of the condition, several points stood out: (i) the initial perivascular inflammatory changes in the veins, (ii) the hæmorrhages, (iii) the growth of new endothelium. X-ray therapy was used for treating inflammation in other sites, and tuberculous granulation tissue did show satisfactory response to X-ray therapy. Irradiation had its definite action in increasing the rate of the humoral defence mechanism in inflammatory processes by breaking up certain of the cells of the inflammatory exudate. Not all of those cells were broken up; but after the disintegration the contained antibodies and antibacterial substances were liberated into the inflammatory field much sooner than otherwise would occur under normal conditions. Only very low dosage was needed to produce that effect, so it was better to use repeated treatments spread over a considerable time in the chronic forms of inflammation. For tuberculous conditions it was found advisable to give irradiation treatments once or twice weekly over a period of two to three months. Irradiation also had a direct effect in preventing multiplication of cells, and therefore it was logical to use irradiation for inhibiting the growth of endothelium. Again, in that connexion only small doses were indicated, spread over a long time, as it was not desirable to produce necrobiosis of the growing cells. Inhibitory effects only were needed.

Dr. Kaye Scott said that in treating Eales's disease he used a technique which delivered a dose of 100*r* to the posterior chamber twice a week for a period of eight to ten weeks. If necessary, a further course of shorter duration (six to eight weeks) was given after an interval of three or four months. Applicators of the Rees-Martin type were used to shield the lens system and ensure irradiation of the posterior chamber only. The eye was irradiated by a temporal field, 2·5 centimetres in diameter, and also by a field introduced through the opposite nasal bone, of the same diameter. If bilateral irradiation was necessary, such a technique caused a high dosage to be received by the nasal septum. That could be obviated by arranging that two-thirds of the dose to the individual eye was delivered from the temporal field and one-third from the nasal field. By that means, delivery of irradiation to each eye resulted in dosage of the same order to each posterior chamber and to the hot spot on the nasal septum, and therefore no damage ensued. The results of treatment so far had been satisfactory. It was found that the blood from recent hæmorrhages was absorbed reasonably quickly, but that the presence of old hæmorrhage material was not significantly altered, and any existing haziness was not improved. There did seem to be some reason for thinking that the occurrence of further hæmorrhages was arrested. The tolerance of the lens was reasonably high, and was probably of the order of 2000*r* in one week as the upper limit of safety, so the doses given should not run any risk of forming lens opacities, and no changes of that type had been noted in the patients treated. Great care was taken during set-up to see that the lens system was included in the direct beam.

DARCY WILLIAMS (Sydney) asked what the intraocular pressure was in the second case reported

F. J. B. Miller (Adelaide) replied that it was thirty-five millimetres.

F. B. WALSH (United States of America) said that X-ray therapy had been a means of treatment for the last two years after Reece and Guyton had reported the results of X-ray treatment in retinal blastomata. He found it difficult to assess exactly what it did, but felt that it had been a great factor in treatment. As to rutin, he did not know of any particular good it had done. He accepted the condition as being a manifestation of tuberculosis; at least it seemed that allergy to tuberculous toxins was the mechanism responsible. It had been usual to include sarcoid and brucella infections as tuberculous. It was notable that a number of diseases such as those were

being excluded from those thought to be tuberculous. Tuberculin therapy he found difficult to assess, but he considered X rays to be the principal sheet anchor in treatment and looked on tuberculin as an auxiliary. He was not able to speak accurately on the dosage of X rays, but he knew that 2000*r* was the maximum dose. Ten to twelve treatments were usually given; then the patients returned in three to four months for a second series of treatments. As a rule the condition was monocular and only the affected eye was treated.

J. B. HAMILTON (Hobart) said that eleven years before, when he read a paper on Eales's disease and said that it was tuberculous, there was only one member who agreed with him. With regard to prophylaxis in any tuberculous infection, it was now known that it was important to remove the patient from the source of the infection—he would then get better without any treatment. With regard to X-ray treatment, Dr. Hamilton was still doubtful whether the lens was sufficiently protected. He did not feel that the trouble was just a vitreous hæmorrhage, but a periphlebitis of the whole uveal tract. For instance, the condition might start with acute iritis or cyclitis; that was to say that Eales's disease was a disease of the globe generally, and not just of the retinal vessels that could be seen.

C. COLVIN (Orange, New South Wales) asked whether Dr. Miller had ever performed a cataract extraction on a patient with Eales's disease. He himself had used rutin and "Promin".

F. J. B. Miller (Adelaide), in reply, said that with regard to exercise, he had always thought that patients were better off taking some exercise. He thought the prognosis was difficult to state. He had not used potassium iodide in treatment. With regard to X-ray treatment, he was not familiar with it; it held great promise. He was interested to hear that Professor Walsh regarded X-ray treatment as a sheet-anchor. In reply to Dr. Hamilton's remarks on contacts, he did not think that that was the whole answer. In reply to Dr. Colvin's question about complications of performing cataract extraction, he had not performed one.

### Congenital Glaucoma.

G. H. BARHAM BLACK (Adelaide) read a paper on congenital glaucoma, based on seven cases, and including one case of juvenile glaucoma. He said that congenital glaucoma was a rare disease; the cause appeared to be an anatomical defect at the angles of the anterior chamber combined with poor development or absence of Schlemm's canal. Heredity appeared to play little part in the ætiology. By contrast, in the ætiology of juvenile glaucoma, heredity was of paramount importance. The diagnosis of hydrophthalmia from megalocornea was sometimes difficult; in the latter condition tension and vision were normal and the cornea was clear, splits in Descemet's membrane were absent, while an hereditary factor was often traceable. In hydrophthalmia the cornea might be large as the result of stretching. Obvious signs and symptoms attributable to raised tension might not occur at all stages, but always arose sooner or later. In the series under discussion splits in Descemet's membrane had been found for certain in only two cases. At operation the corneæ were œdematous in degrees varying from slight haziness to almost starling's egg blue. From the published results of many ophthalmic surgeons it seemed that no one operation could be relied upon to give consistently good results. In the series under discussion the operation employed was corneo-scleral trephining. No treatment with miotics was carried out, since it was thought that the best chance of restoring or preserving useful vision lay in early operative interference. With regard to prognosis, analysis by Ringland Anderson of many authors' results led to two conclusions: (i) If operation was performed, it could be expected that one patient in three would be blind, one would have visual acuity of less than $^6/_{60}$ and one would have more than that by the age of twelve years; after the age of twenty-five years no patient had better visual acuity than $^6/_{36}$. (ii) If no operation was performed, only one patient in four would retain visual acuity of $^6/_{60}$ or more, and two would be blind by the age of twelve years; 60% of patients aged between twenty-five and fifty years were blind. There was no reason to hope for a better outlook for the children in the cases under discussion.

ESME ANDERSON (Melbourne) opened the discussion. She said that in four years she had had only two cases; the first patient was one of twins, and both eyes were affected. She had performed an iris inclusion. The result in one eye was good, but was not so good in the other. In the second case the condition was monocular and possibly megalocornea was present; the clearing of the cornea after operation was dramatic when the aqueous was let out. Dr. Anderson always used an iris inclusion in such cases. She had considered using a trephine, but thought she would continue as she had done while she obtained good results. She had no ideas to add to the ætiology of the condition, other than Dr. Black's and those of Dr. Graeme Anderson.

CLIFFORD COLVIN (Orange, New South Wales) said that he had had only two or three cases in thirty years. Trephining had been the treatment, and the results were reasonably good. The children could see, but he had not examined them since. He mentioned an interesting case of a baby who developed keratomalacia in one eye, with the centre of the cornea sloughed out. The baby had many other ailments and was being treated with penicillin. However, the cornea regenerated and the eye developed a condition like congenital glaucoma, and he did not perform a trephining operation. The tension had stayed down, the baby being now only twelve months old. Dr. Colvin said that his policy would be to carry out a trephining operation in such cases.

C. COHEN (Sydney) referred to a case of buphthalmos in a deaf-mute, aged thirty years, with relatively raised tension. Operation was refused and he was given miotic drops. Later the condition had improved, but Dr. Cohen had subsequently discovered that the patient had not used the eserine drops, but had used homatropine, which had been used on the other eye. After eighteen months the patient returned with greatly raised tension in the buphthalmic eye. Dr. Cohen performed an optical iridectomy down and in, which relieved the condition. Later he performed a trephining operation, and as soon as that was done, the peripheral part of the cornea collapsed like a concertina. The result of the trephining was not satisfactory. He wondered if Dr. Black had noticed a great collapse in the anterior chamber after trephining, due to much stretching of the peripheral part of the cornea.

E. W. ARNDT (Perth) said that he had had a few cases of the condition in the last four or five years. One patient was a woman, aged forty-five years, who had been operated on at the age of ten years. Another was a child, aged six months, whom the parents did not want operated on, and who subsequently died of a malignant brain tumour. The third patient was a child, who was operated on successfully. The fourth patient was a child he had examined at the age of one year, and who was now six years old. Both corneæ were stretched. The child could see with the right eye. Upon trephining, he had found the cornea thin at the limbus. An iridectomy was also performed. After a few weeks the tension went up again. The tension in the left eye had been up to 50 to 55 millimetres, then down to 30. The child was able to walk about, pick up beads *et cetera*, but later the sight became worse. Two months earlier Dr. Arndt had performed a trephining operation on the left eye and found the subconjunctival tissues much thickened. In one month the tension rose again to 40 millimetres. Upon a second trephining operation, fluid gushed out. The tension remained down until four weeks later, when it again arose to 45 to 50 millimetres. Dr Arndt then performed an extensive cyclodialysis. At the time of the meeting the tension was good and the child saw freely. If that treatment failed he would try an iris inclusion. He had had several cases of keratomalacia leading to complete loss of the cornea.

J. BRUCE HAMILTON (Hobart) said that there were no children in the blind institution in Tasmania with congenital glaucoma. Dr. Black had had a unique oppor-

tunity of studying the series of cases, and further results would be expected.

G. H. Barham Black, in reply, said that he was a little disappointed at negative replies, and he could only assume that his series of cases in South Australia had been unique. In reply to Dr. Esme Anderson with regard to iris inclusion, he said that trephining was not necessarily better; each surgeon liked his own operation. He did not think that iris inclusion was often performed in South Australia. As long as his results compared favourably with those of others, he did not think he would change his technique. Concerning the appearance of structures at the trephining operation, no typical bleb formed as in an adult, but a little thickened pad, and it was remarkable that that was sufficient to keep tension down. To Dr. Colvin, Dr. Black replied that he knew little about keratomalacia in that type of case. To Dr. Cohen, he said that he had not seen the concertina appearance of the peripheral part of the cornea at the trephining operation, but he saw how it would occur. To Dr. Arndt, he said that it seemed that the sooner the operation was performed the better.

### Neoplasms of the Eyelids.

B. K. RANK (Melbourne) read a paper on neoplasms of the eyelids. He said that almost all known neoplasms occurred in the lids. There was no doubt that, whatever their nature, surgical excision offered the best guarantee of cure without complications, and generally the best cosmetic results, provided that three conditions were fulfilled: (i) that the excision could be truly adequate; (ii) that tissue loss was respected and no tens. l factors were introduced in wound closure; (iii) that the reparative procedures for any resultant defect were those best suited to the case. Dr. Rank did not agree with the commonly held view that radiotherapy was the better form of treatment for neoplasms of the eyelids. Dealing first with innocent neoplasms, he said that they fell into three main types—papillomata, melanomata and angiomata. Adequate surgical removal could usually be effected by one of three procedures: (i) simple excision or electrolytic destruction, provided that no undue scar formation would follow: (ii) excision, with closure of a large skin defect by a free skin graft or some local flap arrangement; (iii) in the presence of any doubt about the innocence of the tumour, a bulk excision of the lid; up to one-third of a lid margin could be removed, if careful technique was observed. Dr. Rank pointed out that surgical removal of innocent conditions not only offered a sure result, but allowed the whole lesion to be examined in relation to the lines of excision. The risks of radiotherapeutic measures in relation to the eye were well known. With regard to malignant neoplasms of the eyelid, Dr. Rank said that they were mostly epithelioid tumours, ranging from epithelioma to basal cell carcinoma, and the differentiation was not sharp. Treatment required cure or destruction of the growth; cosmetic results and repair procedures were secondary considerations. In most cases surgery gave the best results; radiotherapy should be considered in relation to surgical excision. Excision must be adequate in extent and in depth; areas of excision indicated in most ophthalmological text-books seemed hopelessly inadequate. Dr. Rank then described the methods of repair of the tissue defect after adequate excision. He pointed out that surgical excision of malignant tumours permitted thorough microscopic examination of all areas and further excision if necessary, before a recurrence had had time to develop. Radiotherapy had its place as a supplement to surgery; but it also had certain serious disadvantages.

C. COLVIN (Orange, New South Wales), in opening the discussion, agreed with Dr. Rank that surgery was to be preferred, and he always considered surgery first. New-growths around the lachrymal sac, such as basal cell sarcomata, he preferred to refer to a radiologist; but tumours round the eyelid he always excised, performing a flap graft and tarsorrhaphy.

ADRIAN JOHNSON (Sydney) was pleased to hear Dr. Rank say that he saw the bad results after treatment. He thought that many lesions in the lids were not suitable for radiotherapy, but advances in technique were always occurring in that work. In telangiectasis there were dangers from insufficient shielding, and surgery could give just as good a cosmetic result.

R. KAYE SCOTT (Melbourne) said that he was personally familiar with the fine work being done by the plastic surgeons. However, he could not accept Dr. Rank's statement that surgery was the treatment of choice for all malignant tumours of the eyelid. Squamous and basal cell carcinomata were radiosensitive, and provided that correct techniques were utilized, a high proportion of satisfactory results should follow treatment of lesions of the lid. However, ineffective treatment was apt to cause recurrence, or excessive treatment necrosis, and correct planning of irradiation was essential. Some scarring could not be avoided, but the cosmetic effect should be reasonably good. Radium needles should be avoided if possible, as more scar was produced by their insertion than by external methods. However, interstitial treatment was necessary if the growth was of infiltrating character, as spread tended to occur into the orbit, and needles then should be placed around the growth down and along the adjacent orbital walls to catch possible extension in that direction. Smaller lesions of the lid were satisfactorily treated by external radiotherapy given by an X-ray machine. The conjunctiva was anæsthetized with cocaine and a rounded lead shield was slipped over one lid and behind the involved lid to protect the eye. Divided doses of X-ray therapy were given over a period of one to two weeks. Loss of cilia was usually inevitable in the treated area, and a satisfactory surrounding safety margin should always be treated; that perhaps increased the loss of cilia on occasions. One disability was the obstruction to the tear duct which followed effective irradiation of the puncta or of the duct. However, that was often necessary, as the growth commonly tended to impinge upon those structures, and either irradiation or effective surgery would therefore subsequently interfere with tear drainage. Dr. Kaye Scott believed that the result of treatment of the usual types of malignant tumours arising from the epidermis was so good that irradiation certainly formed the method of choice, and that surgery should be reserved for the small proportion of cases in which failure was evident or in which necrosis or delayed healing was subsequently seen. Those cases were surely relatively few, and the plastic surgeons were apt to get them. But they should not condemn radiation methods solely for that reason, and ophthalmologists should be assured that radiotherapy could eradicate carcinomatous lesions occurring in the lids in a high proportion of cases with a satisfactory cosmetic result in addition.

B. K. Rank, in reply, said that he agreed with Dr. Johnson and Dr. Scott if they accepted the view that there were radio-recalcitrant lesions. In malignant conditions both surgeons and radiologists should get down to finding a solution of the problem. Recurrences were seen after radiotherapy. Whatever the treatment, if a cure was brought about, all right; if not, then they must give the other fellow a chance where they had left off.

### Ophthalmology in General Medicine.

GEORGE A. BREW (Melbourne) read a paper on the scope of ophthalmology in general medicine. He said that as a group ophthalmologists tended to be isolated, taking little interest in other branches of medicine, and quoted a statement by Leonard Mitchell, in the course of which it was affirmed that if ophthalmologists were to continue to justify their position, it was incumbent on each one of them to remember that they were primarily medical practitioners. Perimetry was a procedure at which ophthalmologists should excel; but as a rule the neurologist had a better technique. Many ophthalmologists, and indeed some hospitals, did not possess a two-metre screen and test objects as small as one millimetre. It should be realized that the short radius perimeter, even in its best models, was but an introduction to the examination of the visual field. Dr. Brew then described in detail several devices which he had been using for some years, and which made Bjerrum screen work comfortable for the patient and easy for the examiner. In his relations with

the physician, the ophthalmologist must be better with the ophthalmoscope and better with his clinical observations of and around the eye; to him must be reserved the finer points in diagnosis. But it had to be remembered that ophthalmology had its limitations in medicine; sclerosis of the retinal vessels might coexist with good health and no abnormal physical findings; cerebral vascular disease might be present, and yet the fundal vessels might show little more than slight compression at an arterio-venous crossing; one eye might be more informative than the other. The diabetic patient would always be of mutual interest to the ophthalmologist and the physician. Dr. Brew cited a number of diseases to illustrate the help that the ophthalmologist could give to the physician in diagnosis. He referred to the widespread and increasing incidence of essential hypertension, and to the ophthalmologist's place in the team considering the performance of splanchnicectomy in a given case. He then presented an analysis of the retinal findings in 2000 cases, the patients all being aged over forty years and all complaining of headache or ocular symptoms, with no history of hypertension. It was found that healthy retinal vessels were the rule, the mean rate being 66%. The "compression" group comprised 25% of patients of all ages. An important group (8% of all people aged forty years and more) consulted an ophthalmologist in the first instance and had retinal vascular sclerosis with or without hæmorrhages or exudates. Such patients presented a problem to the ophthalmologist. He should be equipped to estimate the blood pressure and in some instances it might be desirable for him to undertake special investigations. Dr. Brew stressed the importance of fostering good relations between the ophthalmologist and the general practitioner, whose importance in the medical team could not be over-estimated. In conclusion he said that there should be wider interest in ophthalmology in all branches of the medical profession, and suggested three methods of attaining that end: (i) thorough teaching of the undergraduate, preferably in the ophthalmic department of a general hospital; (ii) a compulsory question in ophthalmology at the final examination (that was lacking in Victoria); (iii) active advertising of the specialty, by the presentation of cases or papers at general clinical meetings.

Cedric Cohen (Sydney), in opening the discussion, said that he was impressed with Dr. Brew's method of taking histories and noting the findings. Medical ophthalmology embraced so much that only one aspect had been dealt with predominantly on that occasion, and they would do well to tabulate and correlate other series of data of interest. Essential hypertension was a subject that needed the cooperation of physicians, and he suggested that that research could be best carried out on the larger series of patients met with in public hospitals. Dr. Brew had referred to the isolation of ophthalmologists in the profession; yet Dr. Cohen asked whether their physician *confrères* always cooperated to the right extent. With regard to perimetry, the method shown by Dr. Brew should lessen inaccuracies due to fatigue of the patient. Dr. Cohen had found that in cases in which repeated sittings were necessary fatigue came on rapidly, and any way of getting rid of that was of great value. He had often found it hopeless to do readings with colours. Concerning hypertension, he felt that the extent of the arteriolar lesions was the first major factor in the prognosis of hypertension brought out by the examination of the retina and determination of the functional state of the kidneys. There was a tendency in general practice to underrate that early stage. He often found it difficult to prevail on patients who showed those early stages and were without symptoms, to be further examined. He gave an example of a man, aged fifty-four years, with nipping of the veins, who stated that his general practitioner had told him that everything was "O.K." three months previously. But they, as ophthalmologists, felt that they should take further steps in such a case. With regard to avitaminosis, Dr. Cohen thought that they ought not to see much of it in Australia. There should not be the need to give vitamin concentrates; it was more a case of correcting the patients' diet. Another point about essential hypertension was that it was always puzzling to him to see advanced signs in one eye while the other showed little or no signs. Concerning diabetes, he said that, contrary to the opinion of physicians, some cases were not associated with arteriosclerotic retinal changes. With regard to the change of refraction in diabetes, Donaldson of Sydney had noted the shift to the *minus* side of refraction during the stabilization of a diabetic; he had kept patients under observation and noted changes of refraction up to two weeks after stabilization. He advocated as a sound rule that in all cases of myopia the patient should be sent on to a physician. Dr. Cohen said that he felt that there was a definite form of diabetic retinitis, namely, small circular hæmorrhages and exudates with zig-zag margins. He put forward the idea that larger statistics on those lines would be useful for life assurance purposes. One of their aims towards cooperation with the general practitioner was to make him "eye-minded". With regard to teaching in New South Wales, Dr. Cohen said that there was an eye question in the final examination. The sixth-year students did a twelve weeks' course in ophthalmology.

D. D. Paton (Perth) said that he felt guilty at not having kept records of cases as Dr. Brew had done. He felt unable to discuss much of the subject, as the paper would need to be read and studied at leisure. With regard to perimetry, he wondered how the examiner prevented the patient from moving the eyes off the fixation point. He asked Dr. Brew to give more information on that question. With regard to cooperation with general practitioners, Dr. Paton said that he did not like to give the patient a letter with his findings to take to the doctor, but preferred to telephone the doctor or to send him his findings in a separate letter. In Western Australia they had formidable rules for the registration of specialists, which were to be submitted to the authorities for inclusion in an Act of Parliament dealing with registration. He considered that it was necessary for a man to have five years of training in his specialty before being registered as a specialist. With regard to fatigue in perimetry, Cushing had not attached importance to the colour fields, as the brightness of the object rather than its colour was picked up by the patient. Headache was a subject which should be investigated carefully as to the kind of pain and the times of its occurrence, before it was associated with possible eye defects. A point Dr. Paton wished to bring out with regard to the balance of the diet was that at cafeterias in institutions he thought that employees, principally girls, sat there all the mealtime instead of taking a walk outside. He put in a plea for recognition of old-fashioned gout.

K. J. Cullen (Perth), speaking as a young general practitioner, said that he found difficulty when he referred a patient to a physician who referred him to an ophthalmologist. The last-mentioned would say to him: "I only do the eyes", and Dr. Cullen found it hard to pin someone down to give him the opinion he sought.

C. Colvin (Orange, New South Wales) thought that diabetic hæmorrhages in the retina had a characteristic small round form and were uninfluenced by insulin.

G. A. Brew (Melbourne), in reply, said that in perimetry it was amazing how fatigue was lessened by the patient's being made comfortable in the apparatus. The frequent examinations of one patient with glaucoma occupied only fifteen minutes on each occasion. With regard to unsteady fixation, Dr. Brew said that he worked with a trained assistant who kept that point under observation all the time. He had given up colour scotometry and perimetry; he had found that the photochromatic interval varied so much, particularly with red, that it was difficult to standardize the results. He was in agreement that life assurance companies would be wise, before increasing the amount of an insurance policy of a person over forty years, to have an opinion from an ophthalmologist. He thought that the exudates in diabetes were irreversible, and that diabetics more often died of their arteriosclerosis than of the diabetes *per se*. With regard to opinions in consultation, he thought that the ophthalmologist should give a prognosis on his findings, though there cooperation was needed with the physician.

### Retrolental Fibroplasia.

F. B. WALSH (United States of America) presented a paper on retrolental fibroplasia in premature infants, by William Councilman Owens and Ella Uhler Owens, from the Wilmer Institute of the Johns Hopkins Hospital. This was an account of original work done by the two authors, as yet unpublished. It will be published later in the United States of America.

CEDRIC COHEN (Sydney), in opening the discussion, said that his only excuse for entering the discussion was to draw attention to a case that had been diagnosed as one of retrolental fibroplasia by Norman Gregg in May, 1948.

G. H. BARHAM BLACK (Adelaide) said that he had two cases that might fall into that group; both patients had smaller eyes than usual. He thought they had been born prematurely. The first patient had pale masses in the fundus near the periphery, which had increased in size. The eye was excised for a supposed glioma; the pathologist gave no diagnosis. The second patient had a clear lens, posterior synechiæ and vessels running across the eyes, and a mass situated behind the lens completely blocking the pupil. The child had another ailment diagnosed as pseudosclerema, because of the presence of subcutaneous thickening of the skin. The child died, but the cause of death was not known. Sections of the eye were examined, but no satisfactory explanation was given by the pathologist. Dr. Black asked Professor Walsh if the children he had examined had other bodily defects.

C. COLVIN (Orange, New South Wales) asked Professor Walsh if he thought that the modern rather complicated treatment given to the very small premature infants to keep them alive was a cause of the condition.

E. COUPER BLACK (Adelaide) asked whether Professor Walsh thought that as the normal full-time infant remained in complete darkness until birth, the exposure of the eyes to light for a month or two before they normally would have been exposed so irritated the retina as to be a causal factor.

J. B. HAMILTON (Hobart) asked whether congenital retinal detachment was related to the condition.

F. B. Walsh (United States of America), in reply, said that if infants were premature with small eyes, and if the condition was bilateral, they should in the present state of knowledge be included in that group. Eyes of that type were always smaller until glaucoma supervened. It was important in diagnosis to distinguish the condition from retinal blastoma, in which the eyes were not smaller. To Dr. G. H. B. Black, Professor Walsh said that, as to the first case, he would agree that it was a case of retrolental fibroplasia; as to the second, it might have been. The condition tended to occur in only one eye in the larger children. As to an association with pseudosclerema, he did not know if there was anything in it. To Dr. E. Couper Black, Professor Walsh said that some attention had been given to the point raised. Newborn puppies had had their eyes artificially opened, but that experiment had given negative results. The puppies had gone on like other puppies. To Dr. Colvin, Professor Walsh said that if, as was thought, such cases were recent findings only, it would be as well to follow the matter up and see what was being done now to premature infants that had not been done before. It was obvious that consideration might be given to whether it was wise to struggle so much to keep very premature infants alive when a certain proportion would become blind from that disease. To Dr. Hamilton, Professor Walsh said that he thought that congenital retinal detachment might be related to the condition. He had not gone deeply into the pathology. Terry had advised operation for no good reason that he could see, and there had been no good results. In Professor Walsh's cases operation had been performed and the membrane pulled out; it was composed of fibrous tissue and retinal elements.

### The Ophthalmologist in Industry.

A. L. TOSTEVIN (Adelaide) presented a paper on the role of the ophthalmologist in industry, which was read on his behalf by J. BRUCE HAMILTON (Hobart). Dr. Tostevin deplored the fact that as yet in Australia ophthalmologists in general had made no real contribution to the problem of eye conservation in industry. Apart from humanitarian considerations, the matter was one of great national importance, and he had unsuccessfully tried to arrange a meeting of representatives of the Visual Hygiene Committee of the Ophthalmological Society of Australia to discuss the matter. Its solution required the cooperation of all concerned—management, employees, employee organizations, industrial medical officers, lighting engineers and ophthalmologists. Ophthalmologists themselves required instruction on the relation of their work to industry. In Australia at the present time eye injuries accounted for 25% approximately of lost time and minor accidents; 90% were due to foreign bodies, heat burns and chemical burns. Thus if the universal continuous wearing of eye protection equipment could be introduced, the vast majority of eye accidents would be prevented. Industry itself had done its best to find a solution, and every kind of protective device had been tried; after an initial period of cooperation and sometimes even enthusiasm, employees had rejected them all. The provision of free vision-corrected spectacles had met no better fate. Dr. Tostevin believed that in any ophthalmological service provided by a business house, the employees should have a financial interest, for four reasons. (i) It was a human characteristic that things which were free were rarely appreciated. (ii) Every man should accept some responsibility for his own health and for his own safety. (iii) It took a man a few weeks to become accustomed to spectacles and obtain the full benefit from them; if he had partly paid for them, he was more likely to persevere. (iv) Part payment by the employee was an insurance against careless loss or handling, and would reduce the cost of repair and replacement. Dr. Tostevin outlined what he thought would be suitable arrangements for the provision to employees of properly corrected spectacles when they were required, and of plain spectacles when correction was not required. The service would provide four advantages. (i) The employee would be advised of the condition of his eyes after specialist examination. (ii) He would be supplied with a pair of spectacles exactly suited for his work, which he would be able to wear with comfort, and which would afford mechanical protection for his eyes. (iii) If the spectacles had corrected an unrecognized refractive error, fatigue would be less, general health would be improved and ability to work would be safely increased. (iv) The examination would include assessment of his vision for both distance and near work; spectacles would be provided for one or other, according to his work; however, if he wished, he could obtain the prescription for spectacles made up at cost to meet his other visual needs. Referring to the well-known lack of cooperation by employees, Dr. Tostevin said that investigation had shown that a combination of propaganda and discipline was necessary; discipline at the present time seemed out of the question, so safety propaganda was all that was left. In summary, the role of the ophthalmologist in industry included the following: (a) willingness to make factory inspections and advise on any general aspect of eye protection problems; (b) prompt attention to employees referred for eye examination; (c) prompt attention for eye injuries—the ophthalmologist should regard himself as a consultant to the industrial medical officer or general practitioner who referred the patient. Dr. Tostevin finally put forward the tentative suggestion that an attempt should be made to interest children in the value of their eyes and make them careful of their precious sense of sight. The children of the present day were the workers of the future.

E. COUPER BLACK (Adelaide), in opening the discussion, said that the subject had not been given the attention it deserved. Those present would feel that when they went back to their own States they would do something about it. As secretary of the Visual Hygiene Committee, he could say that there was going to be cooperation with other bodies interested in eye protection and the welfare of workers in industry. He did not agree with Dr. Tostevin that the methods hitherto adopted of inducing employees to protect their eyes had failed and produced

few good results. Speaking as one closely associated with one industry—namely, the South Australian railways—he could say that tactful handling of men with free issue of good types of goggles had reduced the number of lost-time eye injuries. Unfortunately accurate figures of injuries to personnel were kept by few establishments, and then they were not on a uniform basis. In some cases every accident, however trivial, was recorded, in others only more serious accidents, and again the enthusiasm to report all minor injuries might vary from year to year. In the South Australian railways over the last seven years, the percentage of all reported eye injuries to the total number of reported injuries varied from 16 to 21, with a mean of 18. Dr. Couper Black then presented the following table, which showed figures collected over a series of years expressed as eye injuries per 1000 employees.

*Eye Injuries per 1000 Employees on Wages; Years Ending June 30, 1941 to 1948.*

| Injuries. | 1941 | 1942 | 1943 | 1944 | 1945 | 1946 | 1947 | 1948 |
|---|---|---|---|---|---|---|---|---|
| All reported injuries— | | | | | | | | |
| Workshops | — | — | 145 | 116 | 119 | 135 | 270 | 209 |
| Transportation | — | — | 115 | 68 | 62 | 74 | 62 | 48 |
| Maintenance | — | — | 23 | 24 | 22 | 23 | 22 | 22 |
| Total employees | — | 96 | 127 | 87 | 83 | 92 | 141 | 107 |
| Lost time injuries— | | | | | | | | |
| Workshops | — | 39 | 47 | 39 | 45 | 39 | 38 | 32 |
| Transportation | — | 6 | 17 | 25 | 27 | 26 | 28 | 20 |
| Maintenance | — | 11 | 11 | 4 | 3 | 3 | 11 | 7 |
| Total employees | — | 23 | 32 | 30 | 32 | 28 | 29 | 22 |
| Loss of useful vision in one eye— | | | | | | | | |
| Workshops | 3 | 1 | 2 | — | 2 | — | — | 1 |
| Transportation | — | 1 | — | — | — | — | — | — |
| Maintenance | 1 | 1 | — | — | — | — | — | 1 |
| Total employees | 4 | 3 | 2 | — | 2 | — | — | 2 |

Dr. Couper Black went on to say that when eye injuries were considered for which a man lost one or more days' work, one was on safer ground, as such figures gave a truer indication of the number of eye injuries which were disabling and of importance. Those were known as "lost time injuries"; there workmen's compensation payments came in, it was easier to get accurate figures, and statistics of one establishment could be compared with those of another. In explanation of the terms used in the table, he said that "workshops" included employees in the railway's workshops, which could be classed as heavy mechanical engineering; "transportation" included employees who worked on trains and at stations—engine drivers, firemen, guards, porters *et cetera*; "maintenance" included men who kept the track in order, driving in dog-spikes, handling metal ballast, and doing pick and shovel work, work on erection of buildings *et cetera*. The hazards for eye injuries were different in each of the three classes. The rates per thousand employees of "all reported injuries" in the workshops were much higher for the years 1947-1948, because of an intensive drive by the safety officer to report even trivial injuries; that exemplified one of the pitfalls in judging by figures only. In the other two classes of employees that instruction did not prevail, and the figures showed a decrease in the last year. From the lost-time injuries more could be learnt; the workshop's figures for the last two years showed improvement. A full-view goggle of transparent plastic material had been supplied free to the men. Dr. Black showed one of the goggles; it gave full unobstructed fields to each side, and was more readily worn by the men than the old type with opaque sides and only two circles of glass in front. The figures for the transportation workers, constant over recent years, showed an improvement in the last year. Train crews had been for a little over a year supplied free with a light celluloid goggle which fitted snugly on the face and gave full fields of vision. The only explanation for lower figures in years 1942-1943 was that a much better class of coal was then used, which threw off less particles. The "maintenance" figures varied a good deal from year to year; thus the absolute numbers were small, and the annual variation was not unexpected. Goggles were not issued to or worn by those men, and it seemed hardly practicable to "push" the wearing of them. Dr. Black then said that eye injuries could be divided into three classes: (i) trivial, causing no loss of time and leaving no disability; (ii) those causing a loss of time and leaving no disability or a small lesion, such as a central corneal nebula, which might diminish visual acuity a little; (iii) those causing gross loss of visual acuity on to complete loss of sight. The table showed how patchy the annual incidence of the third class was. The one case among the workshop employees in the last year was not really an industrial injury; something was thrown at a boy and hit him in the eye. Chance played a large part in the serious eye injuries. For instance, the three cases among the "maintenance" employees occurred in the comparatively small number of 115 lost-time injuries over the eight year period, and the nine cases among the workshop employees occurred in 1555 lost-time injuries—ratios of one in 38 and one in 173 respectively. Of the 13 cases of loss of useful vision in one eye, one resulted from something thrown (apparently due to "skylarking"), one resulted from a stone which flew off a fork during the handling of ballast, one case occurred during work at a lathe, and the ten others occurred during the use of a hammer. In none of the 13 cases were goggles worn, nor were they ordinarily worn at those jobs. No one thought of wearing goggles when he used a hammer to hit another piece of steel, or whatever it was; and yet it was the outstanding cause of serious eye injuries in that series of cases. The 13 cases of serious loss of vision represented 8·7% of all serious injuries including deaths. Dr. Black stated that in 1944 he had read a paper on eye injuries in industry before the Ophthalmological Society of Australia and had then shown methods of eye protection other than goggles. It appeared that by the known protective measures eye injuries in industries could be greatly, if not completely, prevented, as far as flying particles from emery wheels, caustic splashes, flashes from arc-welding and cinders from locomotives were concerned; but with regard to the use of a hammer on cold chisels, punches, split pins *et cetera*, the position was difficult. Hammering rarely gave off a flying particle, but when it did it was likely to have the most serious effects.

DARCY WILLIAMS (Sydney) said that Dr. Tostevin was to be commended on his enthusiasm in bringing to notice what a vast project was before them. He suggested that the Visual Hygiene Committee of the Ophthalmological Society of Australia (British Medical Association) should ask members to report over a period of six months the industrial eye injuries they had dealt with, to give some idea of the incidence. He thought a man would be needed to devote all his time to the work—a young man who had the time to spare. The matter was one to which the Visual Hygiene Committee was going to give more attention during the ensuing year. It was the hope that an executive committee would be formed in one of the capital cities to implement those matters with heads of industries.

### Results of Trephine Operations.

C. S. COLVIN (Orange, New South Wales) read a paper on the results of trephine operations in glaucoma. He said that glaucoma was usually considered as primary or secondary, according to whether the factor producing the condition was or was not known. The operation of trephining had been in use only since 1909. He had one patient whom he had been able to follow up for fourteen years. Dr. Colvin said that his practice was not to perform a trephining operation immediately glaucoma was diagnosed, but to try to control the disease with miotics from the early stages for as long as possible, sometimes a matter of years. When either the visual acuity or the visual field was progressively deteriorating in spite of miotics, then operation was advised; it was best carried out before the visual acuity fell below $^6/_{12}$. In acute glaucoma, if the eye settled down with the half-hourly instillation of eserine and hospital treatment, a trephine operation was performed; if decongestion did not follow the use of miotics, he preferred iridectomy or an iridencleisis performed with the Graefe knife. He had also used cyclodialysis, mainly after cataract extraction and when needling was required. Iridencleisis was used chiefly for

the treatment of secondary glaucoma, such as exfoliative capsular glaucoma. Dr. Colvin then gave the detailed results in 45 cases, in which trephining operations had been carried out; most of the patients were suffering from primary *glaucoma simplex*, which had developed as the patients aged. In a few cases lens opacity developed soon after operation, and in some cataract developed later. Chorioidal detachment occurred in three cases, but in all the condition settled down. Dr. Colvin did not think it a serious risk, but believed that it should be watched for. Late infection was possibly the greatest risk. In two cases a second rise of tension after the trephine operation suggested the presence of tumour, so the eye was removed; in one a small sarcoma of the chorioid was found, and the other patient died five years later with a history suggestive of melanoma. Dr. Colvin believed that no case of glaucoma should be regarded as hopeless until thorough investigation had been carried out. He said that, contrary to the commonly held opinion, an improvement in visual acuity and visual field did sometimes follow operation. In 11 cases the visual acuity deteriorated later, owing to infection (one case), cataract (six cases), iritis (three cases) and chorioiditis (two cases). In one of the cataract cases extraction was performed; the patient now had visual acuity of $^6/_6$. Dr. Colvin said that the impression was gained from the results that the chance of success was higher if the operation was performed before visual acuity was less than $^6/_{12}$ and before the visual field was very defective. Only 8% of failures after two years were found in the series, and after ten years the 15% of patients who could be traced had full vision. Macindoe had stated in 1946 that even with trephining a 40% ocular mortality rate was to be expected; in the series presented, the over-all percentage up to two years was 16.

CEDRIC COHEN (Sydney), in opening the discussion, said that they were interested to hear Dr. Colvin's paper after having heard Dr. O'Brien's paper in 1947. One performed the kind of operation with which one obtained the best results. They should keep their minds pliable and be ready to perform the most suitable operation. There was such a thing as a perfect trephine but a poor result. He asked Dr. Colvin what kind of trephine he used, as he (Cohen) was a firm adherent of the clockwork trephine. He had used it when it was impossible to get sharp trephines, as he found the amount of trauma from a blunt trephine to be excessive. He did not know of anybody who had used it and had discarded it. He had been interested in Dr. Colvin's paucity of complications. He had found that if one method had some complications, then the other method had also. Those complications drove people to seek another method of getting filtration. He had found that myopia was not rare, and had seen it as high as 10·5 dioptres. He congratulated Dr. Colvin on his informative tables.

F. J. B. MILLER (Adelaide) asked if Dr. Colvin thought that late infections were influenced by the position of the trephine hole, as in two cases he thought he had made the hole too far back.

D. R. GAWLER (Perth) said that he was a little uncertain whether Dr. Colvin was attaching more importance to visual acuity than to fields; he himself thought that fields were more important than visual acuity. He asked for the opinion of members on that point. In answer to Dr. Miller's question on the position of trephine holes, he thought it important; if the hole was put too far back the iris did not float up, and if the ciliary body was touched he did not think the operation would be so successful.

G. H. BARHAM BLACK (Adelaide) did not quite gather from the figures how Dr. Colvin compared his results with Dr. O'Brien's. With regard to lens opacification, if there was a shallow anterior chamber and any detachment of the chorioid occurred, there was likely to be marked lens opacification.

ESME ANDERSON (Melbourne) supported Dr. Colvin in the use of the mechanical trephine. She said that her reasons were that it was simple and the stop gave confidence, and she had got the same number of good filtering scars as with the ordinary trephine.

C. Colvin (Orange, New South Wales), in reply to Dr. Miller, said that he agreed with Dr. Gawler that the position of the hole made a difference. He would err in making the hole forwards rather than too far back, as one would be likely to injure the ciliary body and stir up iridocyclitis. As to orientation, he said that he had seen eyes with holes made at the 2 and 3 o'clock positions; he thought they were more liable to infection than if the holes were well up under the lids. With regard to the choice of operation, glaucoma was an eye condition in many cases associated with general disease. In reply to Dr. Gawler, Dr. Colvin agreed that fields were just as important. In the presence of $^6/_6$ visual acuity and an enlarging blind spot, he operated straight away. In reply to Dr. G. H. B. Black, Dr. Colvin said that the trephine operation compared favourably with the Lagrange operation. He thought Dr. O'Brien had not given enough time to justify the formation of an opinion, and that many of his operations were in early cases. Chorioid detachment was a worry, but in the three cases the chorioid went back satisfactorily. As to reformation of the anterior chamber, he now closed the flap with a stitch as a routine measure and injected a little air with a syringe, which reformed the anterior chamber quickly and did no harm; the air was absorbed in twenty-four hours. All those operations had been done with a hand trephine of 1·5 and 2·0 millimetres. In group II of his cases (visual acuity of $^6/_{12}$ to $^6/_{60}$ before operation) he usually used a 2·0 millimetre trephine, as he had found that in cases in which he had to snip out a bit of tough Descemet's membrane the 2·0 millimetre trephine gave room. He always used a very sharp trephine, but he thought he would give the mechanical trephine a trial.

## Glaucomatous Uveitis.

N. M. MACINDOE (Sydney) presented a paper on glaucomatous uveitis, which was read for him by J. L. DAY (Perth). Dr. Macindoe stated that he had spent some weeks in 1947 working and observing at the clinic of Professor Dr. Marc Amsler in Zurich; there he had acquired much new information about the diffusion and composition of the abnormal aqueous and of the variations in its pressure. On his return to Australia he soon had four cases of acute glaucoma secondary to uveitis in subjects aged under forty-five years. In each case acute glaucoma was the presenting symptom, secondary to iritis, hidden cyclitis, early peripheral chorioiditis and circumpapillary chorioiditis. Paracentesis of the anterior chamber, the instillation of atropine drops and the administration of sulphadiazine by mouth were used, and the treatment was successful. Dr. Macindoe pointed out that paracentesis in acute *glaucoma simplex* was very bad treatment; it was very good treatment in glaucomatous uveitis. Treatment with atropine alone would have raised the tension still higher and led to further loss of sight; but instillation of atropine after paracentesis made the eye quiet. In two cases it was the albuminous and cellular content of the aqueous that caused the rise in pressure, in the third a swelling of the vitreous, and in the fourth obstruction to the venous return. In no case was the angle obstructed by peripheral anterior synechia. Dr. Macindoe issued a warning that acute glaucoma in persons below the age of forty-five years might mask uveitis.

G. H. BARHAM BLACK (Adelaide) said that, with the exception of the last, the cases reported by Macindoe were not uncommon; but he could not agree with Macindoe that atropine was dangerous in such cases. When deposits on Descemet's membrane and an aqueous "flare" indicated that the glaucoma was secondary to uveitis, he thought that one had to take one's courage in one's hands and use mydriatics. It had been his experience that atropine did not further raise the tension, but lowered it by its action on the ciliary muscle and iris. He thought that in Macindoe's cases the condition would have responded to atropine, heat and sulphadiazine without paracentesis; but that procedure might certainly have hastened recovery by reducing the osmotic pressure of the aqueous.

C. COLVIN (Orange, New South Wales) agreed that it was the recurrent attacks which caused the real worry.

# Section of Pathology, Bacteriology, Biochemistry and Experimental Medicine.[1]

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*Vice-Presidents*: C. H. Shearman, M.B., F.R.A.C.P., New South Wales; E. McLaughlin, M.B., B.S., M.R.C.P., F.R.A.C.P., South Australia; J. H. B. Walch, M.B., B.Sc., Tasmania; A. N. Kingsbury, M.D., B.S., B.Sc., D.P.H., D.T.M. and H., Western Australia.
*Honorary Secretary*: V. A. Fergusson Stewart, M.B., B.S., Western Australia.

## President's Address.

P. MACCALLUM (Melbourne) took as the subject of his presidential address growth and pathological processes. He said that growth as the inherent property of living matter was basic in the consideration of the organism's various adjustments to its environment, internal and external. Pathology considered the full range of possible adjustments at all stages of development, integration, maintenance and restoration. Maintenance was an active growth process. Metabolism was as much a phase of growth as cell division, and since pathological processes transgressed no physiological principles, the interpretation of a pathological process was that of a normal happening in defined conditions. Some terms—for example, degeneration, defence, repair—often betrayed an unscientific bias of thought. Restoration was dependent on the retention of the capacity for growth.

## Cardiac Infarction and Coronary Disease in Post-Mortem Examinations.

J. B. CLELAND (Adelaide) read a paper entitled "Cardiac Infarction and Coronary Disease in General in Post-Mortem Examinations", based on 6000 autopsies at the Royal Adelaide Hospital, 600 at mental hospitals in South Australia and 250 performed for the coroner. He said that there were 147 cases of infarction of the cardiac muscle. The incidence of that condition had increased in the course of the 6000 autopsies from 11, 5 and 11 in the first 3000 chronologically, to 28, 25 and finally 45 in the last 3000. The increasing incidence could not be explained by the aging of the population. Ninety-five of the subjects were men and 52 were women; the men much preponderated in the coroner's series of persons who were found dead or died suddenly (ten men to two women). Most of the subjects were in the sixties, and then followed the seventies and fifties; one subject was in the twenties, two were in the thirties and fifteen were in the forties. In about half of these cases the heart was hypertrophied. There were 24 examples of rupture of, or leakage through, the infarcted heart muscle, nearly equally divided between males and females; the youngest subject was a male, aged forty-seven years. Eight out of the twelve infarctions in the 250 coroner's cases had ruptured or leaked, and four out of ten in the 600 mental hospital cases. Fibrosis of the heart wall was found in 92 instances in the last 3000 post-mortem examinations at the Royal Adelaide Hospital, 77 in men and 15 in women; forty out of the 92 subjects had hypertrophied hearts. Aneurysmal dilatation of the heart wall was present in five subjects, all males, in the total series, and in a woman, aged fifty-seven years, a papillary muscle had ruptured. In the course of the last 3000 post-mortem examinations, intracardiac ante-mortem thromboses, nearly always in the recesses of the left ventricle, occurred in 32 of the 98 cases of infarction and in 14 of the 92 of fibrosis. In addition to the foregoing, coronary atheroma of cardiac importance had been recorded in 106 cases in the last 3000 autopsies; of the subjects probably 63 had died as a result of their coronary disease, and 33 of them had hypertrophied hearts. In the coroner's 66 cases there were 12 examples of infarction and 18 examples of fibrosis in the muscle. In 32 of the remaining 36 persons who had been found dead or who had collapsed and died quickly before receiving medical attention, the only important pathological condition found was coronary atheroma in varying degrees; it more or less reduced the lumen in places, but without obvious clots. During the last 3000 autopsies nearly 10% of the subjects had been found to have appreciable coronary disease, and about 7% had died as a result of it.

[1] The meetings of the Section of Pathology, Bacteriology, Biochemistry and Experimental Medicine with the Section of Medicine, the Section of Public Health, Tuberculosis and Tropical Medicine and the Section of Pædiatrics have already been recorded.

## Immunity in Tuberculosis.

S. D. RUBBO (Melbourne) presented a paper entitled "Immunity in Tuberculosis", which was read for him by P. MACCALLUM (Melbourne). Professor Rubbo said that much of the confusion which existed concerning immunity in tuberculosis was partly due to a lack of orthodox experimental evidence and partly due to the use and abuse of the word allergy. He defined allergy as the acquired capacity of the tissues of an infected or sensitized animal to react with exaggerated and accelerated acute inflammation to reinfection with or to reexposure to the specific sensitizing agent. Immunity on the other hand was the capacity of the host to withstand the damaging effect of the parasite to a degree greater than would be expected of a normal animal. In tuberculosis one of the most firmly established principles was that first infection increased resistance to subsequent infection. It was equally well established that infection with the tubercle bacillus rendered the subject sensitive to tuberculin (Mantoux reaction). The work of the Scandinavian school showed that among nurses the incidence of tuberculosis among tuberculin non-reactors was seven times that among tuberculin reactors. From these observations the development of allergy and the increased resistance of the host were held to be related, and an opinion widely held was that allergy was a function of immunity in tuberculosis. In direct contradistinction to that thesis was the Witwatersrand report on the incidence of tuberculosis among native gold miners in South Africa; tuberculosis was found to be twice as prevalent among tuberculin reactors as among tuberculin non-reactors. Thus it was unsafe to come to a definite conclusion about the role of allergy in tuberculosis; tuberculin sensitivity should be regarded as an indicator of previous infection, and as such associated with, but not necessarily responsible for, acquired immunity in the disease. Extensive studies had failed to reveal the presence of circulating or tissue antibodies which were in any way capable of protective or palliative activity against the tubercle bacillus. Opinion had returned to the nineteenth century belief that the soil was more important than the germ; the course of tuberculosis was determined at least in part by the subject's hereditary constitution and social environment. Familial susceptibility had much to do with determining the degree of resistance to the invading parasite. However, a subject without a family history of tuberculosis was likely to develop the disease in an environment of high intensity of contagion. "Dosage" of infection and the nutrition of the subject were also important factors. Lurie's work suggested that the essential mechanism of immunity to tuberculosis was an increased capacity of the mononuclear phagocytes to destroy tubercle bacilli. It seemed likely that naturally acquired infection or artificially induced B.C.G. immunization enhanced the capacity of the mononuclear cells to destroy and inhibit the growth of tubercle bacilli *in vivo*.

P. MacCallum (Melbourne), in opening the discussion, commented on the loose way in which the term "immunity" was used. He said that immunity was an absolute state.

There were no degrees of immunity. Positive Mantoux reactors had a form of tuberculosis, often undetectable clinically by anything other than a skin reaction. It was not strange therefore that, already having a form of the disease, they should not behave differently from those who so far had not made contact with the tubercle bacillus. He remarked that speculation as to the purpose of allergy was fruitless. To him allergy had no purpose.

F. M. BURNET (Melbourne) supported Professor MacCallum's last remark, and said that mammalian contact with the tubercle bacillus was a relatively recent evolutionary event, and that allergy was probably a side reaction of tissues after contact with the organism. In other bacterial infections allergy and immunity were often associated. That was probably so in tuberculosis; but allergy was far from an index of immunity. He said that hereditary factors were important in susceptibility to the disease.

R. GODBY (Sydney) suggested that, rather than segregate members of the nursing staff who were non-reactors of the Mantoux test and avoid their contact with tuberculous patients, a chest clinic was possibly the best place for such people to become positive reactors.

A speaker disagreed with Dr. Godby, and said that a properly run chest clinic would not produce positive reactors.

COTTER HARVEY (Sydney) said that what was really meant by immunity was relative immunity, and that was better termed resistance. He stressed the differences between natural and acquired immunity, and supported Dr. Godby's contention that a chest clinic was a suitable place for Mantoux non-reactors to become positive reactors.

# Section of Orthopaedics and Physical Medicine.[1]

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*Honorary Secretary*: A. L. Dawkins, O.B.E., E.D., M.B., B.S., M.Ch. (Orth.), F.R.C.S.E., F.R.A.C.S., Western Australia.

## The Injured Back.

S. SCOUGALL (Sydney) read a paper entitled "The Conservative Treatment of the Injured Back", centring his remarks about the discogenic syndrome. He discussed recent findings in anatomy, physiology and pathology relevant to this condition and the related orthopædic aspects of posture, immobilization and mobilization. After a brief reference to modern views on pain in relation to the pain associated with the disk syndrome, Dr. Scougall spoke of the sciatic scoliosis, or list, prominently found. That list was widely assessed as a relief posture from pain and the constant maintenance of such a malposture resulted in the loss of the rest mechanism in the back when the individual was in the upright posture, and associated continuous overloading of muscle function occurred when there was loss of spinal equilibrium. Dr. Scougall considered the functional anatomy of the rest mechanism in some detail. On the subject of treatment by rest in acute and severe cases of the disk syndrome, he advocated immobilization of the torso as in a plaster of Paris jacket with the patient still kept in recumbency in the initial stages after its application. He discussed the advantages and means of correcting malposture before immobilization was effected. The application of a jacket was often of value also when list persisted late in the convalescent stage after operation. The antithesis to that form of treatment was mobilization or manipulation; there was still no final agreement as to the rationale of manipulation. The conception of adhesions could not be excluded. Dr. Scougall hesitated to accept the possibility that a disk might be replaced by manipulation. The pitfalls of manipulation were those of wrong diagnosis due to inadequate investigation. Basic factors of anatomy and physiology were discussed to determine the sphere of manipulation and a series of suggestions made governing its use when it appeared to be indicated.

FRANK MAY (Melbourne) read a paper on the treatment of the injured back by physical medicine. He said that the commonest cause of backache was simple muscular or ligamentous strain. The essential aspects of its treatment were the prevention and management of adhesions by means of physical therapy (heat, massage, movements, exercise and sometimes manipulation) and the injection of "Novocain". Another type of back injury was displacement or subluxation of an intervertebral joint or of a sacro-iliac joint. Simple manipulation often brought relief in recent injuries, but delay in treatment often produced complications from muscle spasm and faulty gait; adhesions and fibrositic nodules might form and treatment involved removing the cause and administering the appropriate physical therapy and "Novocain". It was important in considering low back pain not to overlook acute lumbago and *spondylitis ankylopoietica*. Another common cause of backache was displacement of the intervertebral disk. Preexisting conditions were important in considering even minor injuries; senile osteoporosis and hypertrophic osteoarthritis were most easily affected by a strain, and in the presence of such abnormalities as scoliosis, spondylolisthesis and unilateral sacralization of the fifth lumbar vertebra there was sometimes greater proneness to injury. For fractures of the spine, after the appropriate orthopædic treatment had been given physical therapy was important at various stages of recovery. For the malingerer complaining of pain due to back injury and for the subject of psychosomatic backache there was no place in a physical therapy department, but thorough early physical therapy for back injuries should do much to prevent the latter condition.

E. F. WEST (Adelaide) read a paper on the indications for operation on the injured back. He divided the indications into two groups, those requiring immediate operation and those requiring late operation. Dealing with the first group, Dr. West said that most fractures and displacements of the vertebræ could be dealt with by such measures as traction, hyperextension or manipulation. Facetectomy might be needed for reduction of forward dislocation with complete overriding and locking of the articular processes on one side associated with extreme lateral angulation or rotational displacement. Laminectomy was required, though rarely, to relieve cord compression due to acute retropulsion of an intervertebral disk or bone fragment. The second group consisted of conditions which arose some time after injury. Compression fracture of a vertebral body incompletely reduced might be followed by localized spondylitis with increasing pain and disability; immobilization was then required, preferably obtained by conservative means in older patients and by vertebral fusion in younger patients. For intervertebral disk lesions conservative measures should first be tried, but if those were unsuccessful and the disability was severe enough, permanent fixation of the affected joints by a fusion operation was indicated; if referred pain

[1] The meetings of the Section of Orthopædics and Physical Medicine with the Section of Radiology and Radiotherapy and the Section of Surgery have already been recorded.

was present and its origin was doubtful, the nerve root should be explored. If the presence of disk prolapse with radiculitis was suspected, a period of conservative treatment and observation was first required; correct diagnosis was important and not always easily made. Operation for disk prolapse was required in patients who had had a disability of sufficient duration or degree which could not be relieved by non-operative means; conservative treatment should not be persevered with for too long if not yielding satisfactory results. The usual operation involved removal of the herniated material, and some advocated removal of the entire disk; fusion was indicated only if X-ray appearances revealed a disk so much damaged as to lead to instability and arthritic changes in the posterior joints. In spondylolisthesis, if the symptoms could not be controlled by means of an adequate support, fusion was indicated; if sciatic pain developed after trauma the coexistence of protrusion of the lumbo-sacral disk had to be considered, and if it was suspected, exploration of the nerve roots was indicated together with fusion. Another condition requiring operative treatment was adhesive arachnoiditis following vertebral fracture. Dr. West concluded by stressing his opinion that conservatism should be the rule, and the importance of considering the patient from every angle, including the psychological one.

JOHN HOETS (Sydney) said that everyone would agree that physical methods were important in the treatment of back injuries; Dr. May was right in his insistence on the importance of early treatment of lesions caused by muscular strain in ex-service personnel. Lack of proper appreciation of the lesion, and time wasted in the early stages, were often the cause of a long drawn out and unsatisfactory convalescence and of unfitness for work. Correct diagnosis was essential if harm was to be avoided. Everyone was familiar with the dramatic results which might follow even one injection of "Novocain" into fibrous nodules; but the actual reason for such results was not clear. Dr. Hoets thought that some actual physical change must be brought about in the tissues, apart from the temporary effect of the injection as a local anæsthetic. He believed that the infiltration of the area might distend the tissues and so free minute nerve endings which had become involved in the original exudate (which followed the trauma or inflammatory focus) as it became organized. Sometimes several infiltrations might be required to produce the required relief. As Dr. May had said, the importance of the functional element could not be overestimated, particularly in workers' compensation cases. Where and why the functional element entered the picture was difficult to estimate. In almost every instance of long-continued disability, particularly if it was associated with pain, a superadded functional lesion almost invariably developed. Dr. Hoets thought that they as doctors were often not free from blame for failure in diagnosis, for delay in instituting proper treatment, for too long continuance of treatment with splints or braces, or perhaps most important of all for failing to start rehabilitation from the first and for allowing the patient to suffer from unwise suggestions of serious incapacity by friends who were thinking mainly of the amount of compensation involved.

Dr. Hoets went on to say that Dr. Scougall's paper was hard to discuss. The exact anatomical approach to the problems would require considerable thought and study before the paper could be properly appreciated. Those present were indebted to Dr. Scougall for the facts he had presented. One point required comment. In measurements of the size of the canal either in the cadaver or in the anæsthetized patient, it had to be remembered that it was dangerous to draw conclusions about what happened in normal flexion and extension when muscle action entered the picture—for example, the lifting of heavy weights or the sudden taking of a strain. Dr. Scougall's warning about the risks of forcible manipulation was timely. Not infrequently one heard complaints that the condition of a back not only remained unimproved by manipulation under general anæsthesia, but was actually made worse. Cases of compression fracture had been reported. Dr. Hoets agreed that the rotatory movement of the spine was probably the most valuable manipulation. The simple stretching of the sciatic nerve by hip flexion with the knee extended also remained one of the most valuable methods of dealing with sciatic pain from adhesions possibly within the sheath. Even that manœuvre was not without some risk, as a hip might be dislocated if undue force was used.

Discussing Dr. West's paper, Dr. Hoets said that there were many points about the disk lesion and its treatment upon which they had not as yet stability of opinion. The tendency at present was generally to give conservative treatment a more thorough trial than previously. However, when operation was considered necessary the surgeon had several things to consider—for example, how much lamina to remove, whether or not to perform a spinal fusion as well as removal of the offending protruding disk, and (the point mentioned by Dr. West) whether or not to remove as much of the remaining disk as possible in the hope of promoting bony fusion between the bodies. Dr. Hoets felt that the removal of half a lamina, the spinous process being left intact, did not cause a serious enough weakening to need fusion, but did give a better view and a greater degree of decompression than the interlaminar approach with the spine fully flexed. Even when no prolapse was found, complete relief of symptoms might follow decompression. With regard to spondylolisthesis, Dr. Hoets said that many a patient suffering from that condition was symptomless, and many such patients began to complain without having suffered any gross trauma. Often, however, some other factor had been operative, such as business or domestic worry with a generally depressed state of health, loss of weight *et cetera*. Such a patient might often become free of symptoms if the underlying cause of his worry was removed and if physical treatment was given—the provision of an adequate brace with abdominal support and graduated exercises. He might require his brace for a comparatively short time, for example, only six months, and regain the health he had enjoyed prior to the onset of his pain. If operation was decided upon, a good posterior bone block between the fourth lumbar vertebra and the sacrum gave satisfactory results. The anterior operations for bone grafting were too risky and should not be performed.

M. KELLY (Melbourne) said that he agreed with what Dr. May had said. The most common back injury was injury to muscle tissue. He stressed the importance of examination, especially by palpation, to find any painful nodule that might be present. The painful nodule often produced secondary painful areas referred to adjacent bony points. When the original tender point was found and injected, the reflex tenderness and spasm disappeared. Injection had to be carried out early, as the secondary lesions took on more constant secondary effects. Passive manipulation might produce good results. When the muscular lesion was found, although the examination might be long and tedious, treatment should be followed by full ranges of movement.

J. H. YOUNG (Perth) said that they had heard a great deal about injuries to muscles and ligaments, displacement of joints, adhesions and fibrositis; but no precise criteria had been given for the diagnosis or treatment of those vague conditions. In approximately 60% of cases of first low-back strain there was a preexisting degeneration of a lumbar intervertebral disk which predisposed the patient to strain. In cases of recurrent low-back strain the percentage was higher. In the remaining 40% of cases of first low-back strains, some patients suffered from primary disk injuries and others from conditions the exact nature of which were at present unknown. These were statements which he was prepared to debate. Dr. Young went on to say that patients with disk injuries might be divided into two main types, those without and those with an acquired scoliosis. In the first type he believed that there was usually a small tear in the posterior part of the annulus or in the posterior common ligament which supported the posterior part of the annulus. He had recently been treating such patients by a method introduced by Cyriax. Ten millilitres of a 1% solution of procaine were injected into the epidural space to anæsthetize the nerve endings in what he believed to be the injured tissues. As yet he had had too little experience

of that method of treatment to be dogmatic; but those patients whom he had treated had lost their acute pain and tenderness, and their mobility had been restored in five minutes. The whole psychological atmosphere changed, the patient realized that the orthopædic surgeon was in command of the situation, and his attitude was one of confidence. The acute pain did not return after the local anæsthetic must have been absorbed. Dr. Young believed that that was analogous to the relief obtained by injecting a local anæsthetic agent between the ends of a fractured rib. He suggested that there was a difference between the effect of a local anæsthetic agent applied to the bare ends of an axis cylinder and that of one which had to permeate the coverings of an axis cylinder to reach it. After abolishing the acute pain by that method, he kept the patient in bed for a week. Time might prove that that period was too long or too short.

Dr. Young went on to say that in the type of low-back strain with an acquired scoliosis there was a protrusion of a disk on the convex side. That also was a statement which he was prepared to debate. The patient adopted the scoliotic position to encourage separation of the vertebræ on the affected side and thus to help reduction of the protrusion. In those cases he infiltrated the sacrospinalis muscle on the convex side with 50 millilitres of a 1% solution of procaine to paralyse it and encourage still further separation of the vertebræ on that side. Traction was then applied to the feet. On the convex side there was no muscular action to counteract the traction. On the concave side there was. That was also done to encourage separation of the vertebræ on the convex side. Whether such separation really did take place or not he did not know; but the majority of patients treated by that method lost their pain, their deformity and their limitation of movement in forty-eight hours (*New Zealand Medical Journal*, April, 1948). After the immediate treatment of the first type by epidural local anæsthesia and rest, and of the second type by infiltration of the sacrospinalis and traction, there was still the problem of the degenerated disk which usually preceded and occasionally followed low-back strain. It was not intended to discuss that, as it was a long story. Dr. Young did not think that a grafting operation should be performed unless the disk was first removed or unless the disk was very thin. He said that patients with spondylolisthesis had been treated by removal of the disk and drilling away of the cartilage plates, and the results were much better than in disk operations performed for sciatica. Possibly that was because in spondylolisthesis there was a smaller gap between the vertebræ to be bridged over by scar tissue.

G. W. Pottinger (Perth) said that 10% of the patients were aged under thirty years. As such a high percentage of patients were in the lower age group, the question of prevention arose. In younger patients some abnormality in the lumbar part of the spine was often present; if such an abnormality was present, some guidance about work *et cetera* should be given and an attempt should be made to prevent the development of the low-back condition. With regard to disk lesions and degeneration of the disk, Dr. Pottinger said that from the industrial angle the results of operative and non-operative treatment did not appear very different. Often the patients were not refitted for return to their own occupations. That tended to bear out the statement of Dr. West that one might consider the area as having poor material in its make-up. The question arose whether a consultative body should be set up to go into back problems; about 5% or 10% of the patients required such an arrangement, since they presented problems which their own doctors could not manage. In conclusion Dr. Pottinger once more stressed the importance of prevention.

Marion Radcliffe-Taylor (Perth) said that she had recently had success in treating several patients with back injuries with epidural injections. It was doubtful whether a nodule could be palpated. When a nodule was thought to be present and an epidural injection was given, the previously noted nodule disappeared if the pain was relieved. Dr. Radcliffe-Taylor did not agree that no recurrence of pain followed the injection; but the acute pain did not recur. An epidural injection of 2% sodium chloride solution was good, especially in the early cases. Dr. Radcliffe-Taylor thought that the injuries she had treated were tears in a ligament or annulus; the patients regained their confidence in a few days, especially if the pain was relieved early. It was important then to teach them how to lift; lifting and twisting before the knee joints were stabilized often repeated the original injury.

A. L. Bridges-Webb (Melbourne) said that fibrous nodules did occur. They were not significant in themselves; they were often present in the absence of pain. "Novocain" injection had often failed because the patients were not followed up. Close follow up was essential, with massage and then deep massage with full ranges of movement. In association with gluteal fibrositis a tender area was often found, pain and Lasègue's sign being present. Injection with massage and full ranges of movement often relieved it. Compensation patients should be treated quickly, so that they did not need to be treated for too long a period.

B. G. Wade (Sydney) said that fibrositic nodules occurred in certain places, and could be found along the outer border of the trapezius and on the crest of the ilium and *gluteus medius* tendons. Sir Alexander MacCormick thirty-five years earlier had often injected 30 millilitres of saline solution into the tender areas and relief had followed, although the condition was painful. Dr. Wade therefore wondered whether it was not due to the mechanical stretching of the tissues. He thought that if "Novocain" was injected, the effect would be doubled. He stressed the importance of the follow up with deep massage and full ranges of movement in all directions. He did not favour rest in bed for the patients, but believed in attempting to send them back to work as quickly as possible.

A. D. Smith (Kalgoorlie) wondered why some patients did well and others did not. He thought that the reason might be the difference in the patients. Some carried on with the help of aspirin. He said that when disk lesions and sciatica were present, he had found traction, either unilateral or bilateral, of value; he had also found that the cause was more likely to be in the intervertebral joint than in relation to the disk. That was seen in cases of intervertebral disk lesions when operation was performed and later the pain recurred, although the patient was psychologically in good condition.

L. J. A. Parr (Sydney) referred to the injured back and gout. He said that in cases of rheumatism an injury was often followed by an attack of gouty fibrositis. That should be kept in mind. The blood urea level was sometimes high in an attack, but normal between attacks. Ankylosing spondylitis often began with a minor injury in the back, and later changes due to that condition were found to be beginning; but they took a long time to appear after the injury. Dr. Parr did not consider the nodules of much importance; when excised they were seen to consist of fatty tissue. For the injections only 0·4% "Novocain" solution was necessary as long as there was enough fluid.

B. T. Keon-Cohen (Melbourne) said that he thought certain conditions were curable by injection; but others were pure lumbago, the strain occurring when some pathological change was present beforehand. If there was little doubt that a disk lesion was present, the patient should not be treated conservatively unless he was able to earn his living at his own occupation while undergoing such treatment.

F. May (Melbourne), in reply, said that he did not think fat nodules were an important cause of backache. They were often present and sometimes tender. If they were tender, they should be injected in several directions. If a nodule was present in muscle, it should be treated in the same way. Dr. May agreed with Dr. Kelly's remarks about referred pain, but he did not agree with what had been said about pain in the *gluteus maximus* area; he thought that that was due to faulty gait. Gluteal fibrositis was a definite entity, and was relieved by "Novocain" injection.

E. F. West (Adelaide), in reply, said that Dr. Scougall's paper wanted careful study and should be read several

times. He referred to one point in connexion with removal of the lamina; there should be enough room to allow the fourth and fifth disks to be explored. The passage of a probe was not satisfactory, and the removal of that amount of the lamina was no danger if the back was protected afterwards for several weeks. Referring to epidural injection, Dr. West said that he thought patients so treated should be rested afterwards. The occurrence of gout had to be kept in mind, especially when the patient was a heavily built woman in the middle-age group. Dr. West said that he had sent two or three patients on to physicians for that cause. The condition was often revealed by the presence of pain and symptoms elsewhere. In ankylosing spondylitis the sedimentation rate was not always raised. Finally Dr. West said that he was not in agreement with Dr. Keon-Cohen's remarks about disk lesions, even though the patients were unable to return to work under conservative treatment.

### The Treatment of Fractures.

JOHN R. S. LAHZ (Brisbane) read a paper on the routine treatment of compound fractures. He said that three problems were present, the first-aid treatment, the avoidance or mitigation of hæmorrhage, wound shock and infection, and the treatment of the fracture. The first-aid treatment was briefly outlined and the advantages of traction on and suspension of the limb were stressed. A plea was made for the standard ambulance use of the Thomas bed-splint for lower limb fractures. The need was emphasized for avoidance of movements at all stages of transport and resuscitation, in order to minimize shock. Dr. Lahz described the treatment in hospital where intravenous infusion of plasma and/or blood, the administration of sera and of sedatives and chemotherapy were routinely practised before wound revision was performed. Revision of the wound was delayed till the pulse rate was under 110 per minute and the systolic blood pressure was over 90 millimetres of mercury. Steps preparatory to revision were traction on the limb, a most careful cleansing of limb and wound, and copious antiseptic wound lavage. A plea was made for the standard use of modern antiseptics and lavage. The wound revision was described as it was carried out in all cases of wounds under twenty-four hours old, wounds over eight hours old being more extensively excised than those under. A thorough exposure of the fracture was made. Operative manipulation of the fragments was not carried out except where the procedure was simple and easy. Internal fixation was condemned for the fractures under discussion as being unsafe and unnecessarily damaging, as encouraging suppuration and as further slowing up union of the fragments. Severed tendons or nerves were not sutured. Sulpha drugs were not used in the wound. Further extensive lavage was carried out at the end of revision before penicillin powder was applied. If the injury was under eight hours old the wound was closed, if that could be carried out without tension on the tissue layers. If muscles could be sutured and not the skin, a "Vaseline" pack closed the wound. It was bad practice to close skin over a gaping muscle wound. After eight hours wounds were left open and packed with "Vaseline" gauze—the way in which all compound fractures in war should be treated. After twenty-four hours no excision was performed, the fragments were simply exposed by incision and the wound was drained. The principles of treatment of the fracture were discussed; they could be obeyed with or without plaster of Paris, to which Dr. Lahz said that he was not wedded but generally affianced. It was pointed out that Lister's methods were similar to the modern after-treatment. The local wound state and the clinical condition did not often encourage secondary suture. Chemotherapy was carried out till there had been a carefree convalescence for four days. Dr. Lahz said that 106 compound fractures had been treated indoors in the small clinic in which he worked. There had been no deaths and only two cases of suppuration, both ten years earlier in that list. The good results were not due to chemotherapy which had been in use for the last five years. It was claimed that careful planned routine made the treatment of compound fractures one of the most satisfactory procedures.

B. KEON-COHEN (Melbourne) read a paper entitled "Primary Internal Fixation of Fractures". He stated that it had been shown that, if modern methods and materials were used, internal fixation was the method of choice in the treatment of many different types of fractures both simple and compound. He stressed the advantages of the method, notable among which were perfect reduction, complete immobilization and early restoration of function, particularly after compound fractures. The problem of compound fractures was discussed and results were quoted to show that, if certain principles were followed, internal fixation was not only possible but desirable in the majority of cases. The reasons for failure of the method were examined and ways of avoiding it suggested, notably immobilization of the wound after operation, burial of the metal under muscle, careful placing of the incisions, closing of the incision without tension and the planning of relieving incisions when necessary. Attempts to avoid inevitable delay in restoration of function after compound fracture were recorded, in particular the use of allegedly non-viable bone fragments as immediate cortical grafts, the use of immediate cancellous grafts to replace bone lost at the original injury or discarded at operation, and the use of immediate split-skin grafts to dress raw areas due to skin loss or advanced bridge flaps. In conclusion Dr. Keon-Cohen said that it was necessary to review the outlook on the treatment of fractures. The means were available whereby malunion could be eliminated, non-union prevented and delayed union reduced to a minimum. No one should begin to treat a fracture without a preconceived plan in which union was expected to progress according to schedule. One last and final recommendation of internal fixation as the method of choice in the treatment of the majority of fractures was the ease with which, when it was necessary, the operation of bone grafting could be performed.

B. K. RANK (Melbourne) read a paper entitled "The Plastic Surgeon in a Traumatic Unit, with Notes on Wound Closure in Compound Fractures". He referred to his experience in a traumatic unit at St. James Hospital in London, where the place of reparative procedures in the primary treatment of injuries was appreciated in the days before the introduction of penicillin and sulphonamides. He presented a table of results worked out during that time which seemed to create an *a priori* case for the primary grafting of all soft tissue injuries with skin loss, if by thorough surgical preparation at an early time there was reasonably safe indication for primary wound closure. Dr. Rank pointed out that such had been the developments in a period of ten years that today everyone realized the vast prognostic advantage if primary soft tissue healing could be effected in any case of open injury. The plastic surgeon considered that primary soft tissue closure could always be achieved in the primary treatment of open injuries if the correct technical procedure was chosen. Any city of size should have a traumatic surgery unit, the plastic surgeon having an established place in such a unit. His place was twofold. Firstly, his direct part concerned (*a*) the management of conditions which came into the orbit of his specialty, by virtue of either his practice or the organization of his team (including all facio-maxillary injuries, a large proportion of hand injuries and all large soft tissue injuries including burns, especially when there was extensive skin loss), and (*b*) the carrying out of reparative procedures in secondary treatment. Secondly, he could exert an indirect influence on other surgeons working on the same problem within their respective spheres. Dr. Rank then went on to discuss in detail the correct method of closure of the wounds associated with compound fractures, considering in particular the principles underlying the design of local skin flaps. In conclusion, Dr. Rank emphasized the importance of making use of the plastic surgeon in the treatment of wounds when he was available; it was wasteful not to use him when so much was at stake.

A. R. HAMILTON (Sydney) said that in the three papers presented, on the one hand conservative methods had been stressed and on the other the ultra-modern approach to the problem had been elucidated. Any change from the older and well tried methods of treatment should be under-

taken slowly and cautiously. As Dr. Keon-Cohen had said, the surgeon must have a well trained team, and asepsis must be beyond suspicion before the open operative treatment of fractures was indulged in. Dr. Hamilton thought that internal fixation should be used only when it was impossible to effect reduction and maintain position after reduction. The ability to do both of those things varied considerably in the hands of different surgeons. In the matter of training students and house surgeons and in the post-graduate teaching of general practitioners, conservative methods of treatment should be taught, as it was seldom possible to obtain the ideal conditions for operative treatment except in a few large hospitals. Dr. Hamilton was in agreement with Dr. Lahz's advocacy of the use of a Thomas splint instead of plaster of Paris for the treatment of fractures of the femur; when plaster fixation was used shortening and angulation were practically unavoidable. For wound lavage he used hydrogen peroxide undiluted and in large quantities, scrubbing the tissues with saturated gauze swabs. All compound fractures should be dealt with within eight hours if the patient's general condition permitted. Too often that rule was neglected in general practice. Dr. Hamilton agreed that internal fixation by means of vitallium or similar plates had a place in the treatment of compound as well as simple fractures. He had used it occasionally and had not regretted having done so, although the fear was ever present that sepsis might intervene and produce a result worse than that which would have followed the adoption of conservative methods. It should not be forgotten that sepsis might be blood-borne and might be caused by penicillin-resistant organisms, so that all the precautions taken by the surgeon might be unavailing. Dr. Hamilton supported Dr. Lahz's plea for padded plaster fixation as opposed to unpadded plaster fixation, especially in the treatment of compound fractures and in the early stages of simple fractures. He condemned the use of circular bands of adhesive strapping about a limb. They were not infrequently used to maintain the longitudinal bands for skin traction and might cause most serious complications. He said that in plating a simple fracture he always dusted the wound with penicillin as well as administering it intramuscularly. He was still rather hesitant about accepting intramedullary splinting, since tragic consequences could result if sepsis supervened within the medullary cavity. With regard to immediate bone grafting in the treatment of compound fractures, he thought that Dr. Keon-Cohen's figures were not sufficiently good to warrant such a procedure.

A. V. MEEHAN (Brisbane) favoured the conservative school. He thought that in view of the non-irritating metals coming into use and the result of war training, it would probably be necessary to change step, but the change would have to be made slowly. He had not yet employed plating in many cases, but the results had been excellent. Therefore he had had to be partially converted to that method. He said that Dr. Keon-Cohen's series had been interesting and instructive. Certain cases had to be carefully considered, especially crush injuries. Collaboration between orthopædic and plastic surgeons was important, especially in regard to the early closure of wounds, and orthopædic surgeons must study the plastic surgeon's advice more carefully. With regard to the closure of wounds. Dr. Meehan said that he had found Rutherford Morrison's idea most useful—the making of an incision with a sharp knife in a criss-cross manner to within a quarter of an inch of the skin edge.

A. L. DAWKINS (Perth) said that he had used plating in 30 or 40 cases of fractures. The results were good, and although some difficulties and problems had been encountered he intended going on with the method. In one case a simple oblique fracture was treated with a plate held by two screws; although it held, later aseptic necrosis occurred. The necrotic area had had to be removed and the screws were removed at the same time. As the necrosis was late it was not originally infective; it must have been aseptic necrosis probably due to stripping of the periosteum. In the second case infection occurred; the patient, who had an infectious lung condition, sustained a serious fracture of the tibia and fibula. It seemed that in that case the infection must have been blood-borne. When the plate was removed a sequestrum was also removed which was practically the shape of the plate; but it might have been that the plate was too tightly screwed to the bone. In the third case trouble with the skin was encountered. A plaster cast was applied, but was not split when that was advised, and some skin necrosis occurred. In another case skin necrosis nearly occurred although no plaster of Paris was used; but the bandage was apparently too tight. Therefore all bandaging should be watched closely. Dr. Dawkins thought that the skin tended to give the most serious trouble. He considered that plating did not hasten union but tended to delay it. X-ray examination did not often reveal evidence of union, and clinical union was not easy to determine because the fracture had been plated. Dr. Dawkins said that lately he had been inclined to add chips and cancellous bone when the plates were being applied, but only when the fracture was simple.

A. M. HILL (Perth) said that in talking about internal fixation it must not be forgotten that the latest methods and admission of the patient to hospital were necessary. In the last year he had treated all compound fractures by plating and had never regretted it. But it had to be done early; in one case in which delay was unavoidable owing to swelling and bleb formation, infection followed plating. When the fracture was exposed everything was favourable for plating. Dr. Hill thought that the use of the present plates with round holes sometimes delayed union indefinitely. Every effort should be made to close the skin at the time, even if an opening was left elsewhere, and the periosteum should not be reflected.

R. D. MCKELLAR HALL (Perth) said that the general impression left by the meeting was that plating should be used; but there was an indication for conservatism, the plate to be used only on certain occasions.

C. W. B. LITTLEJOHN (Melbourne) said his experience was that union took place with plating even more quickly and certainly, and was not delayed. He wondered whether the patients were allowed up earlier to walk in a well fitting caliper, and whether that stimulus to the circulation and to nutrition aided early union. Often X-ray examination revealed early callus formation.

E. F. WEST (Adelaide) asked Dr. Keon-Cohen whether he used intramedullary pegs in the treatment of compound fractures of the femur.

B. T. Keon-Cohen (Melbourne) replied that he had not used intramedullary pegs in those cases. He had used plating in only three cases, and they had given the most trouble. The plate was put on only to hold the bones in alignment; but the plate used was not strong enough. Those patients had been treated by a longer period in a caliper before any weight-bearing was allowed.

J. R. S. Lahz (Brisbane), in reply, said that he did not repent. A similar discussion had taken place in Lane's day. Their school was up to the present standard; therefore at the present time reliance was placed on chemotherapy. Of the cases reported, four in Dr. Keon-Cohen's series and three in Dr. Dawkins's series had caused worry. In Dr. Lahz's series of cases over the preceding ten years no suppuration had occurred with internal fixation at the time of the first treatment, although internal fixation had been carried out later at a second operation when the wound had healed. Dr. Lahz therefore found it difficult to become completely converted to primary internal fixation by plating. He thought that the plastic surgeon was necessary to work with the orthopædic surgeon, and that some of the younger orthopædic surgeons should have training in a plastic surgery unit. Chemotherapy had been of great help in the control of certain infections, especially those due to *Bacillus pyocyaneus*, which were difficult to eradicate. Dr. Lahz thought that when a fracture was plated secondarily, a bone graft should be used at the time.

B. T. Keon-Cohen (Melbourne), in reply, said that Dr. Lahz's paper and his were diametrically opposite. Dr. Keon-Cohen appreciated the plastic surgeon's assistance. He did not agree with Dr. Hamilton that a limit of eight hours was categorically correct. In one of his

cases in which a small wound was present, the time factor was much longer and no untoward result occurred. With regard to stripping of the periosteum, he said that he did not interfere with the periosteum in the treatment of compound fractures, but when dealing with simple fractures he was not afraid to do it when necessary. He agreed with Dr. Littlejohn that union was not delayed by plating; his figures tended to bear out that impression, especially in view of the activity that was allowed. He felt sure that if those present would consult their own figures, they would reach the same conclusion. With regard to union, callus did form, and although it was not shown externally it was present internally. In three cases in which it seemed that union had not occurred, at operation firm union was found, the fracture site being invisible although it was chiselled across and a search was made for it.

B. K. Rank (Melbourne) said that any pressure on the flap must be different from the pressure on a skin graft, and the flap must therefore be guarded by a dressing. It might be necessary to drain under the flap to stop hæmatoma formation. A twisted silkworm gut drain was often sufficient.

### Rehabilitation of the Injured.

DOUGLAS GALBRAITH (Melbourne) read a paper on the rehabilitation of the disabled in Australia in which he pointed out that the responsibility of the physician to his patient continued until there was restoration of the sick or injured person as a complete personality to the fullest physical, mental and economic functioning of which he or she was capable; that process was what was meant by the term "rehabilitation". Dr. Galbraith described briefly the development of the plan for restoring to economic usefulness certain handicapped men and women who had served in the 1939-1945 war with the Australian forces. That experience had shown in a practical way how much could be done for the large number of disabled persons in the community and Dr. Galbraith considered that it would be good national ethics as well as good national economics to extend the work to the civilian disabled. Rehabilitation could not, however, be carried out by governmental administrative instructions; it was a community effort requiring the support of the general community and, in particular, of the medical profession. Without adequate medical guidance no scheme for disabled persons could succeed; it was hoped that the government would recognize that and would approach the problem with liberality of vision and imagination. On the members of the medical profession there rested also the responsibility to take a wider view of their own part and to realize that they could give greater aid to their patients so far as their return to full and satisfactory employment was concerned than was covered by purely technical treatment. As doctors their problems were sociological as well as purely professional. If the concept of a wider content of medicine was put into practice in Australia, they could reasonably expect a diminution in the number of unemployed disabled people and also of those peripatetic—and often pathetic—chronic inhabitants of the out-patients' departments of public hospitals.

O. R. CORR (Perth) read a paper entitled "Paraplegics Can Walk", and showed a cinematographic film. He said that in the past the outlook for a patient with a complete spinal cord lesion had been hopeless. Early in 1944 interest in the problem had been awakened in England, the United States of America and Canada, as Guttman (Stoke Mandeville), Munro (Boston) and Bottrell (Toronto) organized hospital centres for the treatment and rehabilitation of paraplegics. The first essential for the work was the development of a team to carry it out; the team should consist of an orthopædic surgeon, a urologist, a plastic surgeon, a physical therapist, an occupational therapist and the ward sister, with a co-ordinating medical officer. The work was slow and tedious. As special facilities were required, it would be an advantage if the patients could be grouped in centres, one in each State. The first requisite in the early stages of treatment of a paraplegic was prevention of ascending urinary infection from the paralysed bladder. It was unnecessary to catheterize the paralysed bladder in the first twenty-four to forty-eight hours after the accident; the bladder would not rupture, but merely overflow. The skin required constant attention to avoid dangerous pressure sores. A diet rich in vitamins and protein and blood transfusions were essential. The morale of the patient had to be built up. The care of the bowels required the use of enemata every two or three days in the recumbent stages; later, straining, with irritation of the anus with the finger, would initiate the necessary reflex. Dr. Corr then described in detail the methods in use at the Repatriation General Hospital, Hollywood. He said that training began in bed by the development of the muscles of the shoulder girdle and of the unparalysed muscles of the back, chest and abdomen. Most of the credit for the results achieved was due to the physical therapy staff of the hospital. When the patient had developed sufficiently, he was made accustomed to sitting in a chair and later taken to the gymnasium for exercise in a walking frame. From the earliest stages massage and passive movements of the paralysed muscles were constantly carried out. Descriptions were then given of the various types of apparatus that had been evolved to enable the patients to walk. That in use at Hollywood was based on the Stoke Mandeville type, but weighed slightly less. Dr. Corr said that concurrent with physical rehabilitation of the patient was promotion of the idea of reemployment. As early as possible the patients were made interested in some form of work by the occupational therapist, and from that some plan was evolved to break down the depression and sense of hopelessness that were all too common. It was hoped that all the patients being treated at Hollywood would go back into economic production for at least part-time work.

L. E. LE SOUEF (Perth) said that the major problem was the coordination of the treatment of the patient with the period of rehabilitation. In California, until a veteran was accepted for his disability by the Veterans' Department, he could not get the benefit of their rehabilitation. Thus a gap occurred during treatment by the army, and in January, 1946, endeavours were made to bring rehabilitation to the veteran before he left the army's responsibility. That problem having been overcome, there was the insuperable difficulty brought about by the soul-destroying pension system in Australia. Fundamentally rehabilitation should start at the earliest possible moment consonant with safety during the period of treatment, and when stability was reached in the condition and the residual disability was defined, then the subject's pension assessment should for the first time be considered. It was to be deplored that politics should so dominate the pension position that, without intense educational methods both for the public and for legislators themselves, the fear was present that pensions, and so votes, would be the primary consideration and not the fundamental welfare of the patient. Further, as had been noted by Dr. Galbraith, they should urge the rapid training of rehabilitation personnel, without whom no scheme of rehabilitation could function adequately.

Dr. Le Souef then turned to the more technical side. He said that medical rehabilitation needed much thought, as the wastage was concealed. They should themselves realize the need already recognized by the government, that rehabilitation methods should spread from the repatriation patients to that much greater group of persons needing them, the civilian population. They should take care that their efforts were not stultified by the outworn politically dominated pension system of pre-rehabilitation days. Once those difficulties had been overcome, then hope would loom over the horizon and the dark shadows of ignorance would be dissipated, the true blessing of rehabilitation being conferred on the citizens of Australia. Dr. Le Souef paid tribute to the work instituted at the Repatriation General Hospital, Hollywood, by Dr. Oswald Corr with the paraplegic subjects. The benefits derived by those patients in the repatriation department had been given to civilian subjects who had been granted admission to Hollywood where their treatment could be given. Dr. Le Souef thought that the modern treatment of paraplegia as far as Australia was concerned had been first instituted by Dr. Corr early in 1946. Those present had seen walking at the meeting both a repatriation and a

civilian patient, both treated at Hollywood. As Dr. Corr had indicated, improvements and alteration had been made in various appliances at the hospital. Dr. Le Souef had visited Guttman's paraplegic clinic at Stoke Mandeville in England in 1945, and in the same year visited the paraplegic clinic at Lindhurst Lodge attached to the Christie Street Hospital for Veterans, Toronto, Canada, under the direction of Botterell. In Canada, all credit for the pioneering work in that field was given to Munro of Boston. Later in the year Dr. Le Souef had met Munro and seen his work. The greatest importance in that field lay in coordination and teamwork. Dr. Le Souef said that, apart from the specialists concerned—urologists, plastic surgeons, neurosurgeons, physical therapists, occupational therapists and vocational therapists—there was a most important member of the team; he was a doctor, frequently afflicted with poliomyelitis or some such condition himself, who acted as guide, philosopher and friend in faithful attendance on the unfortunate patients. Dr. Le Souef said in conclusion that the technical details of the special procedures necessary in those cases had been ably demonstrated in the film shown. The miracle of the blind in their rehabilitation was now a commonplace. It was to be hoped that the miracle of the rehabilitation of paraplegics would in the near future also become a commonplace.

# Section of Oto-Rhino-Laryngology.[1]

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## President's Address.

ERIC GUTTERIDGE (Melbourne) in his presidential address gave a survey of recent advances in medicine and surgery relating to oto-rhino-laryngology. He said that great changes had occurred in the years since the last congress. He discussed the developments in chemotherapy, referring particularly to the sulphonamides and to antibiotics such as penicillin, streptomycin, tyrothricin, gramicidin and tyrocidin. He mentioned some of their achievements in general medicine and surgery and shortly discussed their mode of action, drawing attention to the danger of sulphonamide resistance, which developed as a result of the administration of small and ineffective doses of a sulphonamide for prolonged periods. Discussing the administration and scope of penicillin and streptomycin, he said that in certain infections of the larynx and tracheo-bronchial tree, nebulization of 25,000 and 50,000 units of streptomycin per millilitre was useful combined with penicillin. Streptomycin and penicillin were said to have no deleterious effect upon the nasal mucous membrane. Damage to the ears with diminution of hearing had been reported after injections of streptomycin. With regard to tyrothricin, a dilution of 1 in 5000 was bactericidal as a local application, of use in supplementing surgical operations for osteomyelitis or for suppuration in the accessory nasal sinuses, as an application to the wound at the conclusion of the operation. Dr. Gutteridge said that the sulphonamides and the antibiotics mentioned had revolutionized surgery of the ear, nose and throat, and showed how their use had eliminated or greatly diminished the serious complications that had previously been associated with many severe oto-rhino-laryngological conditions. He shortly described the use of the preparations as prophylactics and in treatment. Among the conditions mentioned were acute *otitis media*, meningitis, cavernous sinus thrombosis and acute and chronic sinusitis; penicillin and sulphonamides were also of value as prophylactics after operations upon the mastoid, labyrinthotomy and the fenestration operation. In most cases of chronic sinusitis surgical measures were required to permit proper drainage. Dr. Gutteridge went on to say that the physiology of the nose and nasal sinuses had been studied intensively, and the Proetz method of sinus lavage had gained establishment. The influence of allergy on the nasal mucosa was recognized. Deafness had received great attention, and much had been learnt of the aviation disease of aero-otitis; radium and radon had been used to diminish adenoid hyperplasia in the Eustachian trumpet. In civilian practice, the child without tonsils and adenoids who became deaf after each coryzal attack and had continuous decibel loss over the low frequencies, required radium or radon applications to the naso-pharynx to destroy the lymphoid tissue in the tube or about the orifice. Complete relief was afforded. The prevention and relief of occupational deafness had received attention. Other types of nerve or cochlear deafness still awaited elucidation. In some cases no cause could be discovered; it had been suggested that a vitamin deficiency might be the reason. Congenital deafness due to maternal rubella, first reported from Australia, had been confirmed by workers in England and the United States of America. The term "Ménière's disease" had passed into pathological accuracy; certain abnormalities had been found in the labyrinthine capsules of patients suffering from the disease, and hydrops of the labyrinth had been revealed. The exact mechanism was not understood, though various theories had been advanced; the most commonly held was that hydrops of the labyrinth was either a disorder affecting the vascular system of the ear or a disturbance of metabolism resulting in water imbalance. Carcinoma of the œsophagus had been recognized as a disease remaining localized for a considerable time. By surgical means and the use of penicillin some successes had been reported. The Lempert approach in mastoid surgery for chronic *otitis media* had gained popularity. Cerebral abscess was infrequent, and the use of penicillin in the abscess cavity allowed the patient to be tided over until encapsulation had occurred. Osteomyelitis of the frontal bone, developing from acute or chronic sinusitis, had been shown to be due in many cases to an anaerobic staphylococcus. Surgical measures were required with the use of penicillin. Much work had been done on the repair of deformities of the nose. In the treatment of diseases of the lower air passages and the lungs the use of the antibiotic drugs as a spray, such as penicillin aerosol, had received good reports. Occasional cures of carcinoma of the larynx had been reported. At the Massachusetts Eye and Ear Hospital, patients whose larynx had been removed were taught to speak. During the past years, infections of the external auditory meatus affecting troops in tropical regions had been recognized; the infections had been divided into acute desquamative and chronic suppurative or eczematoid types, the latter being subdivided into otomycosis, neurodermatitis and eczema. Dr. Gutteridge briefly discussed the pathogens and the clinical manifestations. He then referred to external otitis, which was frequent in civilian practice, the infection arising from swimming or from contact, or being secondary to disease of the scalp. In conclusion Dr. Gutteridge said

[1] The meeting of the Section of Oto-Rhino-Laryngology with the Section of Pædiatrics has already been recorded.

that the trend of oto-rhino-laryngology was towards medical measures. No branch of surgery had received greater benefit from chemotherapy. The great diminution of operative procedures directed attention to physiological considerations and to physical and medical treatment. Cooperation with the immunologist in allergic diseases, the diagnosis of deafness, and the relief of deafness by hearing aid and the fenestration operation would occupy much of the time of the future specialist.

### Allergy in Oto-Rhino-Laryngology.

R. H. O. DONALD (Melbourne) read a paper entitled "Some Allergic Problems of Interest to Oto-Rhino-Laryngologists". He stated that the types of allergy most commonly encountered by ear, nose and throat surgeons were (i) seasonal hay fever or allergic rhinitis, (ii) perennial hay fever or vasomotor rhinitis, (iii) hyperplastic rhinitis—nasal polyposis or nasal asthma, and (iv) other conditions which might or might not have an allergic basis, such as migraine and Ménière's syndrome. He discussed the causes, symptoms, diagnosis and treatment of seasonal and perennial hay fever, including, as a subgroup of the latter, hyperplastic rhinitis with polyposis. A typical case was described of an allergic subject who responded well to major surgical operative treatment on the nasal accessory sinuses. Adequate drainage was provided and every endeavour was made to preserve the ciliated mucous membrane so that the normal physiological muco-cilial action could be restored. Operation was followed by anti-allergic and anti-infective treatment. Dr. Donald discussed the relation of allergy to nasal and sinus infections and, in conclusion, laid stress on the maintenance of the physiological functions of the ciliated mucous membrane of the nose and sinuses and on the importance of preserving and restoring it to normal function and of directing treatment to that end.

H. A. W. WATSON (Melbourne) thought that the paper had been written more from the allergist's point of view than from that of the oto-rhino-laryngologist. He differed from Dr. Donald with regard to operative treatment. In purely allergic cases it was difficult to assess what response could be obtained from treatment, apart from removal of polypi; but he thought that at least the nose should be drained and a decent airway attained. If infection could not be proved, no operative procedure other than that stated would be justified. Many persons considered that cauterization of the turbinates was the only justifiable procedure.

GEORGE HALLIDAY (Sydney) referred to the contracting field of activity of oto-rhino-laryngology. If, as he believed, 70% to 90% of oto-rhino-laryngological conditions had an allergic background, it was time that more oto-rhino-laryngologists took an interest in allergy. He quoted Henzel, of the United States, as believing that inhalation of such substances as tobacco dust, house dust, emanations from newspapers and moulds was the principal cause of trouble in the perennial type of hay fever. Improvements as a result of desensitization to those allergens were claimed.

GERALD DOYLE (Melbourne) deplored the divorcement of allergy and rhinology. He felt that allergy, as it had just been presented, was all dated—stuff he had learned seven years earlier. He considered that descriptions of appearances occurring in the nose were inaccurate. There was a tremendous field of work for rhinologists which was passing them by. He agreed that polypectomy should be performed when indicated, but strongly advised the careful staging of the procedure, with minimal anæsthesia, no stay in hospital and minimal psychic disturbance of the patient. He felt that the precipitation of asthma could be avoided in that way. He had for years desensitized patients by intranasal rather than by intradermal injection and did not object to the production of a severe reaction. In fact, he looked for it and encouraged the patient to expect it. He disagreed with the description of nasal appearances that had been given, saying that in acute hay fever the mucosa was usually bright red. He advocated the swabbing of the nose with solutions of "Benadryl" and the insertion of packs soaked in that drug.

H. G. D. BREIDAHL (Perth), speaking as a Western Australian allergist, said that in Western Australia the biggest autumnal problem was caused by the single chrysanthemum. He stressed the importance of history taking in the elucidation of unusual pollen sensitivities due, for example, to roses. During desensitization he had learned never to be afraid of a severe reaction, particularly with pollen sensitivities. He mentioned work being done in the United States of America on a group of patients, which was still very puzzling. For patients who during desensitization had a severe general reaction, with only a small increase of dosage, "Benadryl" in his opinion should be used with the greatest care. Pharmacists should never be allowed to dispense it without prescription. So far as the group of perennial hay fevers was concerned, it was his experience that in Western Australia foods were by far the biggest factor.

The President, in summing up, said it was obvious that oto-rhino-laryngologists were becoming much more conservative in the surgery of the nose. He agreed that in all cases an adequate airway should be maintained. Any great disturbance of the lining of the sinuses would increase rather than diminish bacterial infection and probably often actually precipitated asthmatic attacks. He pointed out the prevalence of polypi in the fifth decade of life in people with no previous history and usually giving no positive allergic reactions. He advocated the removal of the polypi and the use of radium emanation. He reminded members of the efficacy in many cases of zinc ionization.

### The Surgery of Otosclerosis.

GEORGE HALLIDAY (Sydney) discussed the surgical treatment of otosclerosis. He said that, since the diagnosis could be made definitely only by microscopic examination of sections of the temporal bone, the term "clinical otosclerosis" was used when a presumptive diagnosis was made on clinical examination. The disease was known to be hereditary in type. Dr. Halliday then gave a brief historical survey of the investigation of otosclerosis and of surgical measures used in its treatment. He mentioned the names of many investigators, and said that it was the genius of Lempert that had made the fenestration operation a surgical procedure whose success in a large percentage of cases had been proved over a period of ten years. The chief obstacle to its success still remained—closure of the newly created window. The diagnosis of clinical otosclerosis was made by the history of deafness and by the results of clinical and audiometric examinations. The condition had a strong familial tendency, but the hereditary factor was not invariably detected. The disease was usually bilateral, but might be unilateral, and its incidence was greatest in the third and fourth decades of life. Paracusis was one of the commonest symptoms of otosclerosis, and its absence threw doubt on the diagnosis, but was not a complete bar to operation. Tinnitus was usually observed at the onset of the disease. When it was severe, and particularly when it was associated with attacks of vertigo, it indicated a "malignant" type of otosclerosis; the deafness in that type was progressive, was frequently associated with degenerative changes in the cochlea, and called for early operation. Patients with otosclerosis tended to develop a soft and monotonous type of voice; they also possessed a wide range of tolerability to speech. Active sepsis in the upper part of the respiratory tract, as well as in the ears, was a temporary contraindication to immediate operation; it was advisable to treat allergic rhinitis if that was present. Dr. Halliday then described in detail the tests of hearing which he carried out, and mentioned some of the difficulties met with. He said that subjects of otosclerosis might be divided into three groups with regard to their suitability for operation. Group A subjects were ideal. In that group (i) the Eustachian tube was patent and the drumhead mobile, (ii) the tympanic membranes were intact (scarring was not a contra-indication), (iii) the patients were not more than fifty years of age, (iv) the degree of deafness did not involve a loss of more than 50 to 55 decibels, (v) the bone conduction loss was 20 decibels or less in the frequencies of

500 to 3000, and the same or less in the higher frequencies. In group B, there was a considerable hearing loss in the frequencies above 2000, by both air and bone conduction; some cochlear degeneration at that level had thus occurred. Satisfactory results might be anticipated in a lower percentage of cases than in group A, provided that the other criteria were present. In group C, the bone conduction loss was over 30 decibels in one of the three frequencies from 500 to 2000, and improvement might be expected in only 50% of cases. Dr. Halliday stressed the importance of frank discussion of the likelihood of success of the operation with both the patient and his next of kin; he said that the advantages or disadvantages of operation in comparison with a hearing aid should be made clear. Unless a patient was well adjusted and was able to face and even suffer a failure of improvement, it was doubtful whether he should undergo the operation. Generally the more severely affected ear was chosen for operation, but when there was little difference the ear with better bone conduction was chosen. If tinnitus was more pronounced in one ear, that ear should be chosen, as often tinnitus was relieved by operation. Dr. Halliday said that the type of anæsthesia he used was premedication and then "Avertin" aided by local anæsthesia and small amounts of "Pentothal Sodium" when necessary. Vascular congestion had to be avoided, in order to ensure a nearly bloodless operative field. For his first 60 cases he had used the technique of Lempert; within the past few months he had adopted a modified procedure, a far less extensive exenteration of the cells being carried out, and only the lateral semi-circular canal, the vestibule and the anterior half of the superior canal being polished. Moreover, the more vital change was in the fashioning of the new window, a double blue line being made and the endosteum finally being removed from the window in one piece. Up to the present he had used a loupe for magnification; but in the near future he intended to make the window under a magnification of six to ten times with a dissecting microscope, and with continuous irrigation. Serious complications were rare, owing to the use of sulphonamides and antibiotics. Less serious complications were a discharge from the mastoid cavity, which might last for months, and occasionally an exuberance of granulations. In Dr. Halliday's series of 65 cases the only complication had been facial paresis in one case. No continuance of vertigo had been noted. The fenestration very rarely closed if it remained patent for two years, and rarely after twelve months, and if the maximum hearing improvement was maintained for six months, the ultimate prognosis for permanent improvement was very good. In Dr. Halliday's series only one patient had reverted to a hearing level below the pre-operative level, and that to only a slight degree. Immediate improvement (within six weeks) had occurred in all cases but three. Twenty-one patients had been operated on from twelve to eighteen months before. In ten cases the average gain in hearing was 26·4 decibels. Three cases were complete failures. One patient who had an average gain of 35 decibels three months after operation had not been seen since. Five patients with satisfactory results after six months reported by letter that their hearing was still excellent. Two patients, with average gains of 18 and 25 decibels respectively, both heard well now, but had a decibel loss of more than 30 in one or more frequencies.

R. M. GLYNN (Adelaide), in opening the discussion, recounted his experiences with a smaller number of cases. He expressed surprise that Dr. Halliday had had such little trouble with facial paresis. He recalled a recent article in the *Annals of Otology, Rhinology and Laryngology*, which drew attention to the altered lateralization of the response to the Weber test to the ear not subjected to operation in cases in which there were early signs of serous labyrinthitis after operation. He asked Dr. Halliday to enlarge on his experiences in that connexion, and said that he had found observation of that change to the other ear most helpful in recognizing the early onset of serous labyrinthitis.

H. J. GRAY (Perth) asked Dr. Halliday whether in his experience the results of fenstration were usually as good as the results of using an efficient hearing aid.

George Halliday (Sydney), in reply, said that in his opinion the operation of fenestration of the labyrinth had come to stay, because it provided the patient with a useful hearing range which was free from the disadvantages of the range that could usually be obtained by hearing aids at present on the market. He agreed that the symptom of tinnitus complained of so frequently by otosclerotics was usually found to be unrelieved after operation; but he instanced several cases in which that distressing symptom had been considerably relieved.

### Tracheotomy in Acute Poliomyelitis.

R. M. GLYNN (Adelaide) read a paper on the use of tracheotomy in acute poliomyelitis. He said that, following an article by Priest, Boies and Goltz in the *Annals of Otology, Rhinology and Laryngology*, June, 1947, prophylactic tracheotomy, as well as tracheotomy in emergency, had been employed in the treatment of bulbar paralysis with involvement of the ninth and tenth cranial nerves during the epidemic in Adelaide in the summer of 1947-1948. He discussed the report of the Minneapolis Poliomyelitis Research Commission, and reviewed the indications for tracheotomy. He said that there was a considerable lowering of the death rate as a result of the increased use of tracheotomy. Further, although the 1947-1948 Adelaide epidemic was milder in character than that of the 1937 one, and although the total number of figures was only small, those facts would not have accounted for the improved prognosis. He acknowledged the help of Dr. G. A. McIntosh, the medical superintendent of the Metropolitan Infectious Diseases Hospital, Northfield, who was responsible for the treatment after Dr. Glynn was called in as consultant. He added that their figures could probably have been still further improved, if they had had control in some of the earlier cases, and had been able to perform tracheotomy on the patients concerned.

I. THORBURN (Perth), speaking as a physician in charge of patients with infectious diseases in the recent Western Australian epidemic, said that although none of the patients examined had been subjected to tracheotomy, having heard the paper he felt that some of the patients would probably have benefited by such treatment. He thought, however, that the few bulbar respiratory cases encountered in that epidemic were of such severity and accompanied by so much limb palsy that the patients would probably have died with or without tracheotomy.

GEORGE HALLIDAY (Sydney), referring to the advisability of performing oral or pharyngeal operations during epidemics, said that in the United States of America some authorities had decided that tonsillectomy increased neither the general incidence of the disease nor even the incidence of bulbar types among those who became affected by poliomyelitis.

### Audiometers and Hearing Aids.

FRANK SHANASY (Melbourne) read a paper on audiometers and hearing aids. After a brief historical review of the subject he went on to discuss the audiometer, its construction and function. He described the two types of audiometer, the "fixed frequency" and the "sweep frequency" or "beat frequency" types, and outlined the standards for audiometers laid down by the authorities in Great Britain and in America. He then explained some elements of acoustics with particular reference to the decibel and discussed audiometric technique and the uses of the audiometer, which were (i) the preservation of a record of the hearing for pure tones of all deaf patients, (ii) the checking of progress of treatment, (iii) assistance (more accurate than the Rinne, Weber and Swarbach tests) in the diagnosis of hearing disorders, (iv) as the first step in the fitting of hearing aids, (v) as a preliminary to fenestration, (vi) the provision of a visible record of the hearing loss for medico-legal and compensation purposes, (vii) as a test for malingering, (viii) the obtaining of data concerning tinnitus, (ix) the conducting of simple speech reception tests, the microphone being used, (x) as an aid to conversation with very deaf patients, and (xi) as an aid in the detection of streptomycin sensitivity.

Dr. Shanasy then discussed the hearing aid, which he described as a device which aimed at restoring the hearing to a level sufficient to enable the deaf person to hear conversation; no hearing aid could make a person with impaired hearing hear absolutely normally. Every deaf person could not use a hearing aid successfully and the ultimate result in individual cases could not be predicted with certainty. However, those with pure conduction deafness generally did very well; the nerve-deafened patient had more difficulty. A hearing aid was never recommended if there was a loss of 40 decibels or less, except for occasional use. The criteria for prescribing hearing aids were discussed. Dr. Shanasy said that an air-conduction receiver was preferable to a bone-conduction aid; a perfectly fitting ear mould was important. Aged people with severe senile deafness often were better fitted with a simple device such as a speaking tube or ear trumpet. Dr. Shanasy referred to the two types of hearing aid, the outmoded carbon aid and the modern tube or valve aid, and discussed the construction and advantages of the latter. He considered that hearing aids of the future would have an automatic volume control or "anti-blasting" device, they would be binaural and even smaller than at present, and the cost of upkeep and of purchase would be greatly reduced.

E. W. GUTTERIDGE (Melbourne), in opening the discussion, detailed a method used in the acoustic clinic of Philadelphia when patients were being provided with suitable hearing aids. When an apparently suitable type of aid was selected, the patients were allowed to use them for some hours while going about the city, and in addition they were tested with the most modern and elaborate of speech-testing equipment. In that way, and in his opinion only in that way, could an aid be provided which would give the maximum efficiency for any deaf patient under all circumstances.

A. O. DAVY (Sydney) warned members about the interpretation of audiograms. He instanced a case in which the audiogram suggested the diagnosis of ordinary middle ear deafness, and reminded members that the findings were purely subjective. Actually the objective findings in the case mentioned by him showed the patient to be suffering from an eighth nerve tumour.

GEORGE HALLIDAY (Sydney) advised uniform calibration of all audiometers. He thought that in the near future differences in the type of audiometers in use would be seen. Interrupted tones in use in some parts of America tended to eliminate the factor of the patient's fatigue during examination. He had had personal tests performed with such an audiometer on successive occasions and had found the results to be identical. The readings also were better with that than with any other audiometer.

F. Shanasy (Melbourne), replying to Dr. Halliday, said that, although standardization was ideal, he felt that provided the operator maintained careful calibration of his own instrument, the results obtained would always be a useful guide to progress or retrogression in any particular case.

### Aural, Antral and Tracheal Fistulæ.

B. K. RANK (Melbourne) read a paper entitled "Stenoses and Fistulæ in Oto-rhino-laryngology". He defined stenoses as strictures of the normal openings or passages and fistulæ as abnormal openings or passages, but excluded from the discussion congenital defects which might include those manifestations before, during or after their treatment. He stated that acquired stenoses were always the result of scar which was the result of healing by the secondary intention process. The amount of scar tissue was in direct proportion to the healing time of a wound, and effective healing by first intention was the only preventive of scar production. About a circular orifice it took little scar to have a gross effect; a scar involving the whole circumference invariably caused stricture or stenosis. Cure was not easy; primary healing of the operation wound was essential or the scar was replaced by another scar. The operations were tedious, especially for the patient, whose cooperation was essential. The two prototype operations were the "Z" plastic and the "inlay" graft, which Dr. Rank explained in some detail. He described, as illustrations, cases of treatment of complete nostril stenosis, stenosis of the posterior choanæ, naso-pharyngeal stenosis and stenosis of the auditory meatus. Dr. Rank then discussed fistulæ which sometimes resulted from failure of third intention healing, which was epithelial growth on two surfaces of a granulating wound as opposed to that on one surface as in secondary intention healing. It was important to know if the fistula was lined by granulation and so still capable of spontaneous healing or by epithelium and so incapable of spontaneous healing. Fistulæ might heal with conservative measures or might require a carefully planned surgical operation. The application of caustics, diathermy or cautery to the margins of a fistula did not appear to be rational. After discussing the importance of clearing or controlling infection in the cavities concerned, Dr. Rank outlined the principles of the operative procedure and showed illustrations relating to the management of oro-antral fistula, antro-cutaneous fistula and post-aural fistula.

### Fluid Therapy in Oto-Laryngology.

ASHLEIGH O. DAVY (Sydney) read a paper on some aspects of fluid therapy in oto-laryngology. After reviewing early methods of supplementary feeding, he went on to discuss the syndrome of depletion. He said that œsophageal obstruction provided the most striking example of depletion; severe instances were also seen in cases of meningitis, brain abscess and other intracranial complications of upper respiratory infection. Acute infections of the throat might have the same effect, especially in infancy and childhood. When an operation such as tonsillectomy or radical antrostomy was performed, the metabolism of the patient was disturbed pre-operatively by abstinence from food and drink, then by changes caused by the anæsthetic and operation, such as blood loss, sweating and vomiting. In the post-operative period weakness and disinclination for food accentuated the metabolic upset, which was often increased by interference with swallowing or mastication. In major surgery of the larynx or pharynx, and especially of the œsophagus, depletion might present a pre-operative as well as a post-operative problem. Even a relatively short period of depletion could retard healing, lower resistance to infection, predispose to secondary hæmorrhage and prolong convalescence. A quiescent tuberculous lesion might become active. Depletion was sometimes an important factor in post-operative mortality. The syndrome of depletion usually comprised reduction of body carbohydrate, protein, fat, inorganic salts, vitamins and water, ketosis, impairment of vital functions, hæmoconcentration and hepatic and renal disturbances. When intake was insufficient the body drew on its own fluids and tissues. In starvation, the supply of body carbohydrates was rapidly exhausted. Labile protein was readily available but, after its exhaustion, tissue protein then broke down. Hypoproteinism must be prevented or, if present, must be overcome. In dehydration body fats were an important source of water. Body fats also provided the greatest source of energy in starvation. When the stores of glycogen were exhausted much more fat was utilized, especially by the liver for its metabolic functions. Normal products of liver metabolism were the ketone bodies, namely aceto-acetic acid and acetone. In health the ketone bodies were rapidly used by the muscles or other tissues for energy. In starvation, the liver, mainly owing to its increased use of fat, poured greatly increased quantities of the ketone bodies into the blood stream. The ketone bodies were thus produced in greater quantities than they were utilized and accumulated in the blood stream where they exerted toxic effects. The condition was sometimes called acidosis or, more correctly, ketosis.

Dr. Davy pointed out that a convenient approach to the subject of water and salt depletion was to regard man as an organism whose cells lived and grew on a fluid medium, namely, the fluid of the interstitial tissue spaces. That fluid medium was maintained by the blood which also carried away waste products. The body might be pictured as being divided into three fluid-containing compartments, the interstitial tissue fluid lying between the cellular fluid

and the capillary fluid or blood plasma. The kidneys kept the water and the sodium chloride content of the body normal, both in total quantity and in their proportion to each other, by excretion of excessive water or of excessive salt. Apart from renal and circulatory disturbances, that mechanism could be upset in various ways. Disturbances in water and salt metabolism met with in ear, nose and throat practice were caused by: (i) insufficient intake of water and salt, due to various disease conditions previously mentioned; (ii) excessive loss of water and salt from vomiting or sweating; (iii) hypoproteinæmia; (iv) administration of fluids, especially intravenously, containing either too much or too little salt. The fundamental law of isotonicity of body fluids indicated what happened when too much or too little salt was given; too much salt led to retention of water and œdema, for example, pulmonary œdema. Conversely, too little salt caused the total body salt content to fall, which led to excretion of water and dehydration. With regard to vitamins in starvation, Hunt had demonstrated the importance of vitamin *C* in wound healing and his findings had been confirmed by other workers. That, alone, made it advisable to provide generous quantities of vitamins, especially to patients who were being fed parenterally.

Discussing the treatment of depletion, Dr. Davy said that the provision of fluid nourishment must be preceded by or accompanied by blood transfusion when required. It was necessary at the start of treatment to assume a state of general depletion with, in the more severe cases, some degree of ketosis. The food, water, salt and vitamin requirements must be assessed. Aids in assessing the requirements of the patient were (in order of importance) a full case history, repeated physical examinations and appraisals, repeated examinations of the urine, including Fantus's test for its chloride content, and laboratory tests of blood chemistry and renal efficiency. The only really satisfactory method of administering fluids was by mouth. A tube passed into the stomach through the nose or through a gastrostomy opening gave comparable results. A restless or delirious patient might be heavily sedated twice daily in order to permit the passage of a stomach tube for the administration of fluid nourishment. Intravenous therapy could be life-saving, and it could also be lethal from the administration of too much salt in the form of isotonic saline solution. The danger was greatest in infancy. The possibility of renal inefficiency, whatever the age of the patient, had always to be borne in mind as it added greatly to the hazards of intravenous therapy. In oto-laryngology, normal saline solution should practically never be used at the start of the treatment. When dehydration and starvation were both in evidence the dehydration should first be attacked by giving 4% glucose in one-fifth normal saline solution. If glucose was given faster than it could be utilized it would be excreted by the kidneys. That entailed excretion also of water, so that some fluid loss occurred. Glycosuria accelerated the excretion of salt in the urine, which also entailed excretion of water. If the patient was wasted there was probably some degree of hypoproteinism with hypoproteinæmia. A slow rate insured that peripheral and visceral œdema did not result from too rapid dilution of blood already hypoproteinæmic. Blood serum should be given early to wasted patients in order to provide protein. Amino acids had been given intravenously for the same purpose and would possibly come more into use. When dehydration was under control, 10% glucose solution was useful owing to its high caloric content. Salt depletion might necessitate, for a time, the administration of normal saline solution. If the patient could not sleep, intravenous therapy should be discontinued at night. It was essential in intravenous therapy to examine the patient frequently, especially for signs of pulmonary œdema, and to test the urine frequently, especially for quantity, specific gravity, chloride content, ketones and sugar. The rectal administration of fluids was sometimes useful when water intake by other methods had to be supplemented in limited quantity.

### Sphenoidal Sinusitis in Adults.

CLIVE M. EADIE (Melbourne) read a paper on sphenoidal sinusitis in adults, giving a brief description of the anatomy illustrated by lantern slides. He discussed the pathology of sphenoidal sinusitis, and pointed out that its effects might go further than actual changes in the lining mucosa and in the sinus contents; they should consider (i) the results of infections of the sphenoidal sinus on nearly related structures by the direct spread of toxins and organisms, (ii) the effect on more remote structures and their functions produced by the passage of toxic material discharged from the sinuses through the ostia and (iii) the effect on the body generally of the absorption of organisms and toxins into the blood-stream and the lymphatic stream ("septic focus"). With regard to ætiology, Dr. Eadie mentioned first inflammation of the sinus mucosa resulting from generalized conditions such as influenza, measles, scarlet fever, cerebro-spinal meningitis *et cetera*. His second group of cases consisted of those in which the sphenoidal sinus mucosa was affected by localized inflammatory areas, the rest of the mucosa being normal. In the first group, normally the powers of the mucous membrane were able to overcome such infections and the mucosa returned to normal. It was noticed that often the signs of resistance to infection were more pronounced in some sinuses than in others; Dr. Eadie wondered whether that could not be related to the question of adequate ventilation and drainage of the sinuses. That involved consideration of the factors operating to keep the sinus mucosa in a healthy state, and also of those leading to their lack of resistance when an attack occurred. It had to be remembered that the nose produced a secretion that appeared to be bactericidal; anything interfering with the action of that secretion on invading organisms would hinder recovery. Infection of the sinuses might occur early in childhood, and the seed be sown for future trouble. It was probable that the nasal sinuses were infected through the maternal passages. Poor general health made a patient prone to sinusitis. With further reference to drainage, Dr. Eadie stressed the word "normal" as against "free". He said that Nature should direct their efforts; the idea was not to leave a wide open space leading directly into a sphenoidal sinus, but to correct defects so that Nature might bring about a cure. The effects of breathing the impure atmospheres of cities should not be overlooked. With regard to diagnosis, Dr. Eadie said that the symptoms might be considered as due (*a*) to the inflamed mucosa itself, (*b*) to involvement of adjacent structures and (*c*) to the passage of the actual discharge from the sinus. He described the symptoms in detail. He said that in considering the signs, it was necessary to distinguish between acute sinusitis and chronic sinusitis. In acute sinusitis the mucosa on the posterior wall of the oro-pharynx was red and congested and often had a glazed appearance; later actual yellow pus was noted. In chronic sinusitis the picture of the posterior oro-pharyngeal mucosa was like that of chronic granular pharyngitis; chronic mucopus was often present. Dr. Eadie discussed the signs in acute and in chronic sinusitis, and their relation to the diagnosis. He described his technique of sphenoidal lavage, and said that the procedure caused the patient no more discomfort than antral lavage. Many patients complained of local heat whilst the lotion was being syringed through the sinus; the complaint had no relationship to the actual temperature of the lotion. Dr. Eadie wondered whether any of those present could explain the phenomenon. Treatment resolved itself chiefly into the provision of adequate ventilation and drainage of the infected sinus, together with improvement of the general body resistance. Dr. Eadie outlined the various measures adopted in the treatment of acute and of chronic sinusitis. He said that in acute empyema drainage must be established, either by lavage if possible, or by a sphenoidostomy. With reference to the latter procedure, he pointed out that the object was to provide a suitable environment for the sphenoid sinus mucosa to recover, and care must be taken that ventilation was not overdone, and that the natural treatment of inspired air by the nose was not unduly interfered with. It appeared that an infection of the sphenoidal sinus was often an entity to itself. The posterior ethmoidal cells might be associated with the inflammation, but not necessarily so.

### Intranasal Gliomata.

NOEL M. CUTHBERT (Perth) presented a report of three cases of intranasal glioma, a very rare condition which he stated was formed by the nipping off within the nasal cavity of portion of the anterior end of the neural tube. In two cases the tumour was visible in the right nostril at birth. In the third case the tumour in the right nostril was associated with an extra-nasal tumour over the bridge of the nose. Macroscopically, the tumours had the appearance of a polyp. Photomicrographs showed typical gliomatous tissue of the astrocytoma type. In two cases fluid escaped from the centre of the tumours during their removal.

## Section of Paediatrics.[1]

*President*: F. N. LeMessurier, D.S.O., M.D., B.S., South Australia.

*Vice-Presidents*: L. A. Dey, M.B., Ch.M., New South Wales; J. P. Millar, M.B., B.S., M.R.A.C.P., Tasmania; H. Boyd Graham, D.S.O., M.C., M.D., F.R.A.C.P., Victoria; R. H. Crisp, M.D., B.S., Western Australia.

*Honorary Secretary*: A. R. Edmonds, M.B., B.S., Western Australia.

### Appendicitis in Childhood.

J. C. SPENCE (England) gave an account of the way in which he liked to conduct pædiatric work, with emphasis on the importance of preserving the human relationships and on the value of close observation and accurate recording of the course of events in the illness, in respect not only of the symptomatology, but also of the stages through which each patient came under treatment. He used the subject of appendicitis as a special example; but the principles and methods were of wide applicability. Professor Spence at the outset explained that as a Nuffield Professor of Child Health he had a clinical department under his personal control, with a staff trained in the application of his methods and ideas, and that though he, a physician, had chosen what at first might be considered exclusively a surgical subject, he hoped he would be able to establish the fact that that was by no means the case. He mentioned the comparable subject of burns to illustrate that after certain burns convulsions occurred between thirty-six and forty-eight hours from the time of the accident, and that by repeated hæmatocrit readings, estimation of the blood pressure and other necessary procedures, what was going on in the patient's body could be studied and used for the amelioration and complete understanding of the situation. He emphasized the desirability of records of illnesses by means of which problems could be deferred for solution—for example, why at the sixth hour certain things happened, or when it could be expected that at the twelfth hour something else would happen, rather than to be contented merely with the diagnosis of, say, appendicitis. He hoped that he would not disappoint those present by saying that it was not his intention to tell them anything new about the clinical features of appendicitis; but he hoped to plead for a new approach. It was a fact that in the early stage of the illness people were unable to make decisions, and even experienced practitioners were still uncomfortable and uncertain at the bedside of a child with appendicitis—the "sick child with a bellyache" was a conundrum to most doctors. There were three people concerned on those occasions when things might go wrong, and in writing the notes of a particular case the facts in sequence should be recorded: (i) when and why the parents realized that the child was not well and how long they took to send for the doctor; (ii) how long the doctor had to answer the call, how often he examined the child, and whether he called another doctor in consultation; (iii) when the patient reached the hospital, when he was examined by the hospital doctor, how often he was examined there and by whom, and what their opinions were, together with all the other necessary clinical observations.

Professor Spence then described his system of diagnosis at different levels and specified two tiers of diagnosis, the lower tier being that a certain disease was suspected and the higher tier that an accurate diagnosis was established. He considered that in undergraduate teaching of such conditions as intussusception, pyloric stenosis or appendicitis in childhood the tier I diagnosis should be taught and the tier II diagnosis should be left out. Using pyloric stenosis as an illustration, he said that the tier I diagnosis leading to suspicion was that a breast-fed baby had projectile vomiting. In appendicitis, if "bellyache" in a child continued for twelve hours, the tier I diagnosis of appendicitis should be made and the patient sent along for investigation of tier II diagnosis.

Professor Spence demonstrated from some lantern slides certain summaries of results. In a series of 425 cases of appendicitis, 59% of patients had come under care in hospital within forty-eight hours of the onset and the mortality rate was 2·2%; whereas of the remaining 41% arriving more than forty-eight hours after the onset, 0·8% had died. In 53%, the group in which the doctor had attended within thirty-six hours of the onset, the mortality rate was low, whereas in the remaining 47% when the time was beyond thirty-six hours the death rate was 10%. When the time between the first examination by a doctor and admission to hospital was within twenty-four hours (82·5% of the cases) the patients were appreciably better than in the remaining group when the time was beyond twenty-four hours. The delay then was of material significance to the survival of the patients and was due not only to the ignorance of the parents, but also to the failure of the first doctor to make the tier I diagnosis promptly.

Professor Spence then commented on the risk of mistakes in placement of patients at the hospital; he said that to rupture one's duodenum in a medical ward was a grave risk—a bigger risk that it was to rupture it in a restaurant. Rules were required for the education of parents and doctors, and diagnostic targets should be set, such as that in appendicitis or "bellyache" in children. The tier I diagnosis should be made in not more than twenty-four hours; every further hour of delay made the prognosis worse. The doctor should be called by the parent in not more than twelve hours from the onset, and castor oil should not be given to the patient. Those were the kind of things that every doctor in general practice should broadcast in the vicinity in which he practised. Targets for the doctor should also be set. If he examined the patient within twenty-four hours of the onset, the operation should be conducted not more than thirty-six hours after the onset. The triad for him for tier I diagnosis was "bellyache", vomiting, and low fever. When in doubt, he should examine the patient again in not less than six hours, and until the doubt was dispelled not more than six hours must pass between examinations of the patient. Those things must be taught to the students and repeated at post-graduate refresher courses.

Professor Spence then showed a table in which the presenting symptoms were analysed in the following way: pain 80%, vomiting 15%, pain and vomiting 6% and

[1] The meetings of the Section of Pædiatrics with the Section of Surgery, with the Section of Pathology, Bacteriology, Biochemistry and Experimental Medicine, and with the Section of Oto-Rhino-Laryngology have already been recorded.

febrile disturbance with or without diarrhœa 11%. He said that he instructed the resident medical officers that they should go back to the bedside of the patients at least every hour until tier II diagnosis was made. He quoted an aphorism attributed to Robert Hutchison: "If you don't put your finger on it you are liable to put your foot in it". That was what he meant by special rules for resident medical officers.

Turning to a consideration of the mode of death, Professor Spence said that there had been 21 deaths in the series—4·9%. They had occurred at two hospitals, and the rate at one was 1·9% and at the other 6·7%. Such discrepancies existed for scrutiny and elucidation with the object of correction of faults and improvement of results. He went on to say that there was a great deal to be done with the careful, accurate recording of the circumstances of the care of the sick patient. They should have target figures and should achieve less than 1·0% mortality rate in appendicitis in children. Each year or so the results should be carefully summarized and statistically confirmed, and reasons should be given to show why the mortality rate was above 1·0%. Professor Spence advocated that the teaching of students should be simplified, that there should be improvement in the education of the public, and that target figures should be set and announced to all the people concerned. Failure was not always the fault of the public; in intussusception, for example, the onus lay on the doctor and not on the mother.

F. N. LEMESSURIER (Adelaide) said that he had heard sound advice given by Professor Spence to students in Adelaide, and what he had said that afternoon contained equally sound advice for graduates.

R. H. CRISP (Perth) said that there had been little for him to grasp in what Professor Spence had said, as there were no students to teach in Western Australia, though Dr. Crisp realized that it was of paramount importance in Professor Spence's own department. In Western Australia medical practitioners had not only to make the diagnosis for themselves but also to operate if necessary. Dr. Crisp went on to say that he was disappointed in any attempts he had made to educate mothers, and had found that with mothers a smattering of medical knowledge created difficulties of their own making. As an instance he mentioned that a mother had noticed some curds in the stool of a baby and had looked up the book; but when she found that convulsions were liable to follow she sought advice for that reason alone. Dr. Crisp asked Professor Spence in his reply to refer more particularly to the means by which he believed that mothers could be suitably educated. He also asked him to say whether operation should be delayed in appendicitis when the operation had not been carried out in the acute early stage.

H. C. COLVILLE (Melbourne) said that he thought that Professor Spence had selected the subject of appendicitis as a special means for the advocacy of a general clinical approach and to introduce his valuable theory of diagnosis. Dr. Colville believed that anything that would advance the idea that the patient was a sick person, irrespective of whether he was in a medical or a surgical ward, was a valuable improvement on current practice. The same principle applied equally well to conditions other than appendicitis. In his opinion hospital arrangements were unsatisfactory from the teaching point of view, as students were made to attend certain clinics on a scheduled arrangement which practically precluded the possibility that a student could examine the patient at the time of his admission to hospital and be able to follow the progress of the illness from beginning to end. The students had no opportunity to accept personal responsibility for the care of the patients, and Dr. Colville did not believe that any students saw a patient with gall-bladder disease or appendicitis through from beginning to end. The student system should be modified to introduce the element of continuity into the care of the sick, because as a practising doctor the student would have to see the patient through his illness.

J. C. Spence (England), in reply to Dr. Crisp, said that they had tended to leave localized abscesses while safeguarding the welfare of the patient and studying the natural progress of the disease. It was current practice in collaboration with surgeons to allow time for the abscesses to be absorbed and to attempt to remove the appendix later, possibly in two or three months.

### Acute Hæmatogenous Osteomyelitis.

J. STEIGRAD (Sydney) read a paper on acute hæmatogenous osteomyelitis. He said that a review of the literature during the past three years showed that there was unanimity of opinion with regard to certain points in treatment. (i) The use of penicillin greatly reduced the mortality and morbidity and also the amount of bone destruction and the ultimate disability. (ii) Supportive treatment was necessary, (*a*) in some cases by replacement of fluid, protein, sugar and electrolytes and (*b*) in all cases by bed rest, elevation or splinting. (iii) Conservatism was the general guiding principle, but operative interference at the appropriate time was beneficial in certain cases. Of the various organisms responsible for the condition, 70% to 80% appeared to be sensitive to penicillin. There was no general agreement about the dosage of penicillin, the duration of penicillin treatment or the indications for surgical interference. Dr. Steigrad then discussed the subject in the light of experience gained in the treatment of approximately 144 patients at the Royal Alexandra Hospital for Children from 1944 to 1947, 1944 being the year in which penicillin was first used. In the ten-year period prior to 1944 the overall mortality rate was approximately 10%; since penicillin had been used, no deaths had occurred, the number of days in hospital had been much reduced and almost all patients finally had normal function. Penicillin had to be administered early and in adequate amounts over an adequate period. Dr. Steigrad referred to the need for early diagnosis, which required a high degree of clinical acumen; for successful treatment penicillin therapy had to be instituted when the infection was still contained within the bone and actually within the cortex. The most important symptom in early diagnosis was pain and the most important sign was tenderness. The pain was present early and was over the infected area, which was usually over the metaphysis of a growing bone. The tenderness was constant and exquisite, and was elicited with the tip of the finger over the bone. Soft part swelling and warmth might be present, but generally at that early stage there were few other local indications. The medical attendant might be put off by the presence of evidence of extreme toxæmia with high fever, delirium, lethargy *et cetera*; he might mistake the condition for rheumatic fever, septic arthritis or acute anterior poliomyelitis, and withhold penicillin therapy. On the other hand, syphilitic epiphysitis, hæmorrhages under the periosteum in scurvy and tuberculosis of a bone or joint might be mistaken for acute hæmatogenous osteomyelitis. Dr. Steigrad then suggested a plan of investigation and treatment. Investigation included radiographic examination (repeated on the tenth, twenty-first and fortieth days of the disease), immediate cultural examination of blood for organisms (the examination to be repeated daily while a positive result was obtained), a leucocyte count (repeated twice a week for the first two or three weeks as indicated, then once a week) and estimation of the blood sedimentation rate (repeated in the same manner as the leucocyte count). If the first attempt at culture of organisms from the blood gave negative results and the temperature remained elevated, a further attempt was made. Treatment was by the following measures: (i) suitable immobilization of the limb (indicated in almost all cases); (ii) intramuscular injection of penicillin every three hours in doses of approximately 3000 to 5000 units per pound of body weight in twenty-four hours, the treatment to be continued for not less than twenty-one days; (iii) supportive treatment; (iv) surgical measures if indicated, never a matter of immediate urgency since the introduction of penicillin, but planned and executed with a knowledge of what might be found; (v) after-care; immobilization was required only during the period of penicillin administration, and in some cases for an even shorter time; active non-weight-bearing movement was allowed after the course of penicillin had ended; weight-bearing was allowed only after study of progress skiagrams showed

that adequate recalcification had occurred. The clinical progress usually followed a pattern. Within two to four days of the commencement of treatment the child looked more comfortable and the temperature fell to normal in seven to ten days (any maintained elevation suggested the presence of a penicillin-resistant organism); a rise after a fall to normal suggested that a sub-periosteal abscess might have been missed. If bone damage was absent or slight, the patient might leave hospital within thirty days. If osteomyelitis was due to a penicillin-resistant organism, a sulphonamide drug was used. In some cases—for example, Salmonella infection of bone—streptomycin had proved valuable.

R. McKELLAR HALL (Perth) said that some of those present might have noticed an article by him which had appeared on March 23, 1946, in THE MEDICAL JOURNAL OF AUSTRALIA. It had been published as a result of experiences in Perth with ten cases of osteomyelitis treated with penicillin and without surgery. Since then they had obtained records of another 67 patients and still without surgical interference except for ten sequestrectomy operations. After what Dr. Steigrad had said, Dr. McKellar Hall wondered whether it would be necessary to remove the piece of dead bone, as penicillin might have made it harmless. With regard to the dosage of penicillin, he said that at the Children's Hospital in Perth they were using between 30,000 and 40,000 units every three hours by day and every four hours by night for seven to ten days. They had noticed that sometimes the patient's temperature was still swinging, but stopped swinging when the penicillin treatment was discontinued. If the patient seemed to be cured, they stopped the penicillin therapy and did not use it again unless there was evidence of further sepsis. Very few of the patients had needed more than 2,000,000 units. He also said that they had not used splints or immobilization of any kind unless a joint such as the knee or the hip was involved, in which case simple weight extension was applied. It had been noted that the efficacy of penicillin was seriously impaired if the hæmoglobin value fell below 90%. If the patient became sickly and was not responding well to treatment, a transfusion of blood in sufficient amounts to raise the hæmoglobin value well above that level was beneficial.

ROBERT SOUTHBY (Melbourne) said that a patient suffering from acute osteomyelitis nowadays came under the care of the physicians rather than of the surgeons. He remembered a child sent into the medical ward with the provisional diagnosis of rheumatic fever; but he noticed that she was pale, toxæmic and delirious, and that she screamed whenever the middle of the left femur was handled. Under treatment with penicillin she responded dramatically. Skiagrams taken on the patient's admission to hospital and a week later were clear; but in those taken three weeks afterwards there was definite evidence of osteomyelitis at the suspected site. The hæmoglobin value fell to 55%, and as soon as that fact was realized transfusion of blood was carried out.

D. G. McKAY (Adelaide) said that he had analysed the early records of 20 cases after the introduction of penicillin, and had found that in three of the cases operation had been performed, though nowadays the surgeons practically never operated on patients with osteomyelitis at the Adelaide Children's Hospital; the patients went into the medical ward. Dr. McKay had been impressed with the rapidity with which abscesses of the soft tissues subsided without being opened surgically. Thus the most depressing chapter of pædiatrics was closed. He thought that it was worth mentioning that, though pain had been stressed as a symptom, it might be slight or apparently absent in the case of very small babies; doctors should not make the mistake of thinking that the baby's condition was not inflammatory as they responded most satisfactorily to penicillin.

J. C. SPENCE (England) asked whether Dr. Steigrad had come across pathological fracture of a long bone some time after osteomyelitis. He also stressed the importance in the history of delirium about forty-eight hours after the onset, as that occurrence was almost always indicative of osteomyelitis.

DOUGLAS GALBRAITH (Melbourne) referred to the possibility of overlooking a second lesion in osteomyelitis, and added purpura to the conditions to be considered in differential diagnosis.

J. Steigrad (Sydney), in reply to Professor Spence, said that he recalled one instance of pathological fracture in a patient with a very large sequestrum. The patient had a fracture of the other tibia; it was suggested that the second lesion had not been noted originally. Dr. Steigrad then said that in Sydney surgeons were used to examine the patient urgently, but on making the diagnosis of osteomyelitis they withheld the knife. He had been impressed with what he had heard Professor Spence say in Sydney recently of acute osteomyelitis of the newborn; but in his experience the condition was infrequent and it did not seem to run the same course as osteomyelitis in older subjects. Dr. Steigrad said that he had learnt much from Dr. McKellar Hall, for whom he had had great respect since the publication of his article. Though they had been using more penicillin in Sydney than in Perth, he thought that the exact dosage was immaterial provided that a good response was obtained. Transfusion of blood was used when required.

### Empyema in Infancy and Childhood.

DONALD HIPSLEY (Sydney) read a paper on the treatment of empyema in infancy and childhood. He said that *empyema thoracis* was one of the earliest diseases recognized in antiquity, and Hippocrates had advised its treatment by drainage. Koplik in 1890 had reviewed the knowledge at that time of the ætiology and treatment of the condition. He regarded tuberculous and pyæmic subjects as the stumbling stones of pædiatric practice. Dr. Hipsley went on to say that an analysis of the case records of the Royal Alexandra Hospital for Children, Sydney, for the period from 1942 to 1947, had shown that 43 cases of *empyema thoracis* had occurred. *Staphylococcus aureus* was the most common infecting organism in children aged under twelve months, and the pneumococcus was the most common in children above that age. Most of the deaths in the series had occurred in the staphylococcal group; the majority of the children who died were aged under six months, which fact confirmed the observations of other authors. In almost all the fatal cases the empyema was discovered only at autopsy. That group comprised Koplik's pyæmic group. Dr. Hipsley went on to say that the local use of penicillin in treatment appeared almost to have abolished the necessity for rib resection in empyema. Early and efficient penicillin treatment, parenteral and local, appeared to be the best method; it was first instituted after aspiration, and then, if progress was unsatisfactory, controlled drainage by means of a catheter inserted between the ribs might be necessary. Koplik had concluded that tuberculous pleural effusion *per se* did not occur in children. Dr. Hipsley said that no case had occurred in the series presented by him. He described a case in which acid-fast bacilli were found in the fluid first aspirated. The condition was treated as a tuberculous pleural effusion; but subsequent examinations did not prove the causative organism to be the *Mycobacterium tuberculosis*.

C. J. O. BROWN (Melbourne) said that his experience of empyema in very young children was practically negligible; but he knew the condition well as it affected older children and adults, and he realized that the younger patients were relatively disabled by displacement of viscera and by toxæmia. With reference to treatment, aspiration was needed to get rid of expansion of the chest, and by the use of penicillin the infective character could be overcome. The alternative to aspiration was drainage through an intercostal tube; rib resection was called for only in special circumstances. The treatment should be controlled by radiological examination, and thus the lesions could be observed until the shadows disappeared. If after three weeks the skiagrams were not satisfactory, rib resection should be undertaken. Open drainage at the right time was the safest and most foolproof method of treatment to teach; other methods should be left to experts.

D. G. McKAY (Adelaide) said that they encountered very few cases of empyema nowadays and their experience had been similar to those described by Dr. Hipsley.

H. BOYD GRAHAM (Melbourne) asked Dr. Hipsley whether empyema was the cause of death in the nine cases of empyema found at autopsy. As only one out of the other 33 patients had died, it might be significant to conclude that the old-time alertness in discovering empyema as a complication of pneumonia was lacking nowadays. He considered it advisable to have frequent clinical examinations of the chest made and skiagrams prepared in those cases, and to be satisfied radiologically before patients were discharged from hospital. The risk was greatest with babies as the temperature dropped and the acute symptoms passed off, and treatment with penicillin together with the great pressure to admit other patients to the wards created a risk that a baby with pneumonia would be discharged too soon and would develop empyema after discharge from the hospital.

ROBERT SOUTHBY (Melbourne) emphasized the importance of obtaining specimens of sputum for examination by culture methods and identification of the causative organism. There had been what amounted to an epidemic of virus pneumonia or of pneumonia caused by infective agents, unresponsive to chemotherapy, which had altered the clinical picture of pneumonia considerably, especially in little children.

R. H. CRISP (Perth) referred to the nutritional problem arising in small babies drifting on by secondary infection to pneumonia. He emphasized the importance of general supportive treatment and the value of constant checking of the nutritional status and the blood state.

A. R. BURKITT (Perth) inquired about the end results of empyema; he wondered whether there was any gross limitation of lung movement and any need for heparin treatment for the prevention of fibrin formation and adhesions.

D. Hipsley (Sydney), in reply to Dr. Brown, said that his paper was not a plea for any particular form of treatment. By repeated aspiration the risk of secondary infection was also repeated, and he believed that if there was a call for the repeated introduction of penicillin into the cavity, intercostal drainage should be undertaken to lower the risk of secondary infection. In reply to Dr. Boyd Graham, Dr. Hipsley itemized the causes of the deaths, most of which had occurred among young babies in poor nutritional condition, in whom during life the presence of empyema had not been discovered. Dr. Hipsley agreed with Dr. Southby that it was important to undertake bacteriological investigation in order to know, not only the ætiological factor, but also what drug to use. In reply to Dr. Burkitt, Dr. Hipsley said that so far they had had no occasion to use heparin.

### Medical Problems of Infancy; Infant Welfare.

F. N. LEMESSURIER (Adelaide), in delivering his presidential address entitled "Medical Problems of Treatment Presented to the General Practitioner by a Baby during the First Twelve Months of Life", referred first to the amounts of vitamins *A*, *C* and *D* required daily by infants. With regard to vitamin *C*, it was recommended that the medical profession in Australia should begin giving sufficient in the early days of infancy, so that, if the baby was artificially fed at an early date, the vitamin *C* requirement was covered. From evidence produced by Stevenson, it seemed reasonable to allow the artificially fed infant from the first days of life 220 international units of vitamin *A* per pound of body weight daily, and 100 milligrammes of ascorbic acid per day in divided doses. For infants aged under two years, 400 to 800 international units of vitamin *D* were the recommended dosage. Referring to the use of starch in infant feeding, Dr. LeMessurier recommended that starch in some suitable form should as a routine measure be given to artificially fed infants aged under six months, since it appeared that starch helped in the absorption of cow's milk. Cane sugar was recommended in preference to lactose. The opinion was expressed that the milk intake of older infants should be restricted to 32 ounces per day, and that meat should be introduced into the diet when the infant was aged between eight and nine months. Protein intake could not be considered adequate unless the caloric requirements were met. Referring to the digestion and absorption of fat by the premature infant, Dr. LeMessurier said that Gordon had shown that the use of customary milk mixtures, which contained approximately four grammes of fat per kilogram (approximately 35% of the total Calories), might be associated with excessive loss of fæcal fat and inadequate weight gains. The administration of isocaloric mixtures, from which half the cream had been removed, produced satisfactory gains. The use of half skimmed milk mixtures, in which fat supplied only 15% to 20% of the Calories, was found to be a satisfactory means of decreasing the loss of fat to the level observed in full-term infants given mixtures of unskimmed cow's milk. Protein was well absorbed by the premature infant. Dr. LeMessurier then went on to describe the technique of the gastric drip method of feeding some infants; he said that the method was of particular value for infants who vomited on account of aerophagia or pylorospasm, and was useful for the feeding of some very ill infants. Referring to the chemotherapy of infectious diseases, he said that penicillin and the sulphonamides were at the present time the most prominent new therapeutic agents. With regard to penicillin, its low renal threshold and its lability in the body necessitated continuous injections or administration at frequent intervals. Total daily dosage depended on the character and severity of the infection. There was practically no toxicity or danger of overdosage; but it was preferable to have some basic principles on which to work. At the Adelaide Children's Hospital the dosage for the infant was larger than that recommended by Paterson, and approached that recommended by Buchanan at Glasgow. Recent work had shown the results of oral administration of penicillin in tablet form (20,000 units buffered with 0·5 gramme of sodium citrate); in due course the buffered tablets would be available on the Australian market. Discussing the sulphonamides, Dr. LeMessurier said that the sick baby had to be dosed according to his weight, and it was also essential to consider the comparative data on distribution and excretion of the various sulphonamide derivatives. He referred in some detail to the various sulphonamides in use and to the complications which might be associated with them. He said that it was wise to avoid topical use of sulphonamides on account of the occurrence of severe cutaneous sensitizing phenomena. In no circumstances should sulphonamides be used topically in the treatment of infantile eczema or neurodermatitis. The sulphonamides could be administered orally, by injection or locally. Whenever possible the oral route should be used. Topical application should not be prolonged beyond four or five days. Since penicillin had been found to give good results, it or some non-sensitizing substance would doubtless replace the topical use of sulphonamides.

GRACE CUTHBERT (Sydney) read a paper entitled "A Statistical Survey of Infant Welfare", in which acknowledgement was made of the assistance of H. O. Lancaster and W. J. Willcocks. The survey was based on figures for New South Wales and for Australia and covered trends in mortality in the first twelve months of life. The data were presented on a series of slides depicting graphs and tables. Dr. Cuthbert commented on each slide as it was presented, pointing out the improvement that had taken place in the welfare of the infant population and showing where the improvement had occurred as well as where there had been little or no improvement in the vulnerable age groups, particularly the first week of life.

C. E. A. COOK (Perth) said that it was with some diffidence that he followed Dr. Cuthbert in the discussion, as the statistics were not supplied in a form in which they could be so closely analysed as the figures from New South Wales had been by Dr. Cuthbert. Western Australian figures conformed in some measure to those of New South Wales, but in some respects the figures were worse. He had ascertained that approximately 90% of infantile deaths occurred in the first week and that the neonatal infant mortality rate was three times as high in the country as in the metropolitan area, though it was hard to find out the causes for the difference. The prematurity

death rate of 27% in the country was not significantly different from the city rate of 30%, and the deaths from such causes as difficult labour were not significantly different. When they came to analyse the neonatal deaths from infections such as respiratory and bowel infections, they found that the city figures were lower than the country figures, the proportion of the total deaths being 5% in the city, 10% in the south-western area and 15% in the northern area. Dr. Cook said that if it was permissible to draw any inferences from the questionable figures, the indications were that there was a tendency in the country for deaths to occur from preventible diseases, and that though the deaths of a preventible nature in the city were undesirably numerous, the mothers had been assisted to avoid some of the dangers of infection. The time had come when improved sanitation in the home and in the town and extension of education of mothers in infant hygiene should be put into effect to reduce the mortality rate. The fact that there was no significant difference in the premature and natal mortality rate as between country and town might be regarded as an indication that the midwives and medical practitioners were doing evenly good work throughout the State, though again there was plenty of scope for improvement. Dr. Cook also mentioned that it was hoped that the *Health Act* would be amended in the near future to secure the notification of all premature births and deaths and to make other improvements in the collection of the facts, though it was necessary only to draw up suitable forms and have regulations to ensure that they were completed to be able to obtain much of the information that was lacking.

R. Southby (Melbourne) recalled that Dr. Cuthbert, in explaining the reduction in the mortality rates, had stressed improvements in infant welfare and ante-natal care. He drew attention to the advent of chemotherapy as a favourable factor, and to the susceptibility of newborn babies to chilling and exhaustion from handling as an unfavourable influence. He had been worried at the frequency with which babies coming from the small kind of midwifery hospital to the Children's Hospital arrived with *sclerema neonatorum* in cold weather. He asked Dr. Cuthbert whether they had similar experiences in New South Wales, and whether she thought it advisable to issue instructions that the temperature of each baby should be recorded with a view to preventing falls in temperature.

John Colebatch (Melbourne) said that they should all be grateful to Dr. Cuthbert for her demonstration of the progress made in New South Wales. He presumed that it was Dr. Cuthbert's object to direct discussion to pointers as to the ways in which they could improve the infant mortality figures. She had referred to the ante-natal and natal causes, and Dr. Colebatch was of the opinion that the ante-natal causes should receive the attention of pædiatricians as well as of obstetricians. As examples, rubella and probably other infectious diseases and such conditions as nutritional deficiencies might require study and might possibly be prevented from adversely affecting the unborn baby. Dr. Colebatch then said that he thought from Dr. Cuthbert's figures covering the period from three to twelve months of age that two-thirds of the deaths were due to preventible causes, and more should be done to prevent them. Improvements in general hygiene, more immunization and improvement of the soil—better feeding generally of all the child population under pædiatric guidance—were suggested by him as likely to reduce those deaths.

E. Stang (Perth) asked Dr. Cuthbert whether she could contrast the infant mortality figures for the country and the metropolitan areas in New South Wales. She said that in Western Australia they had started a system of travelling caravans to reach mothers in the country and to advise on infant and child welfare.

F. Kingsley Norris (Melbourne) asked Dr. Cuthbert to discuss the relationship between the women's and the children's hospitals in New South Wales. In Victoria an intimate relationship was developing between the obstetricians and the pædiatricians; the gap between them could be bridged by passing the baby at birth into the care of the pædiatrician.

R. H. Crisp (Perth) said that the facilities for premature babies and weaklings should be extended, and that every big centre should have a post-natal department attached; it should be staffed by pædiatricians and was a necessary adjunct to a children's hospital. They used to have one in Perth, but it had been diverted to other uses, and a new one should occupy a high priority as an essential building. Dr. Crisp said that in regard to infantile deaths due to birth injuries and congenital malformations, research along the lines so admirably suggested by Professor Spence should prove profitable. During the conceptual and early post-conceptual period close observation of the procedures and the prime relationships might disclose preventible mistakes, and they should also try to go a little further with the study of congenital malformations.

Grace Cuthbert (Sydney), in reply to Dr. Cook, said that she was glad to know that they were attempting to obtain more satisfactory statistical information in Western Australia. In reply to Dr. Southby, she said that she had intentionally kept out of the field of treatment, but agreed that extra care in the recording of the temperature of the babies should be taken; in all deliveries at small hospitals the conditions were better for weakling babies if they were transported to an infant welfare home or to a special department for premature babies; but the method of transport had to be satisfactory. In each ambulance unit in New South Wales they were trying to have a special ambulance provided for the purpose. With reference to sclerema, Dr. Cuthbert said that they had had a similar experience in New South Wales to that mentioned by Dr. Southby and in 1943 a circular was distributed with instructions about carrying the baby and informing the mother about the care of the baby. In reply to Dr. Colebatch, Dr. Cuthbert said that she too regretted the high incidence of deaths from preventible causes, and hoped to establish further contact between pædiatricians and obstetricians in the ante-natal and natal stages; it was important to apply sound dietetic knowledge to the problem.

### A Substitute for Buttermilk in Infant Feeding.

R. H. Crisp (Perth) read a paper entitled "A Substitute for Buttermilk and its Use in Infant Feeding", in which he said that buttermilk had been used for a long time on the Continent, where it had an established reputation in the treatment of infants with nutritional disorders. It had never been popular in the United Kingdom or in Australia; it might be more widely used if its advantages were better known. Dr. Crisp discussed the evolution of buttermilk feeding from "natural" to "prepared" and then to "dried" buttermilk ("Eledon"). He gave the formula of "Eledon" and set out the advantages and disadvantages of "prepared" and "dried" buttermilk. He then described the preparation of an efficient buttermilk substitute, consisting of six ounces of evaporated milk, 24 ounces of water, half an ounce or two tablespoons of milk protein powder and three-quarters of an ounce of lactone syrup. He said that the buttermilk substitute contained 3·2% of protein, 1·6% of fat, 4·5% of carbohydrate and 0·47% of minerals; the pH was 4·88 and the caloric value was 14 per ounce. Directions were given for the addition of extra mixed carbohydrates (lactose, cane sugar, dextrimaltose or cereal) up to 5%, as desired, and for the routine addition of extra vitamin concentrate or fruit juice. The use of buttermilk substitute for newborn babies, premature babies and weaklings, in acute dyspepsia, in diarrhœa, in malnutrition and in milk allergy was reviewed. Reference was also made to its use in certain other conditions in which food of high protein and low fat content was desirable, such as congenital steatorrhœa with pancreatic defect, cœliac disease, liver disorders and nephrosis. Special reference was made to the use of buttermilk substitute in enteritis.

H. Boyd Graham (Melbourne) said that the onus of proof rested with Dr. Crisp to show that his buttermilk substitute had any advantages over Marriott and Davidson's lactic acid milk preparations, which had become well and favourably known in specialist circles in Australia under the stimulation of Dr. LeMessurier and his colleagues in South Australia. It was as well to mention in

passing that by the manufacture and use of lactone syrup instead of lactic acid (B.P.) and "Karo" sugar, the lactone syrup milk was readily prepared and used in the average household and was by no means expensive. Marriott and Davidson and their disciples liked to feel that the infant was getting a complete feeding which was readily assimilable, and the gastric acidity curve during digestion was similar to that of breast milk and greatly superior to that of sweetened diluted cow's milk. The gastric acidity curve during the digestion of cow's milk whey was also similar to the breast milk curve. Dr. Graham said that he had introduced whey as a diluent for lactone syrup milk at the Presbyterian Babies' Home, Melbourne, and for some fifteen years it had been used successfully for weak premature and frail debilitated babies, the proportion of whey being reduced fairly quickly as the baby gained in age, weight and strength. Dr. Crisp's buttermilk substitute was actually a mixture of lactone syrup milk with a very aqueous solution of milk protein powder; it would not satisfy the gastric acidity curve test, nor would the progressive addition to it of carbohydrates, even up to 5% of extra carbohydrate, help it to do so. Dr. Graham then quoted Grover Powers's well-known test for suitability of a feeding mixture for infants based on the protein-non-protein ratio by Calories. It was generally agreed that the protein should contribute between 13% and 18%, and the carbohydrate rather more than the fat should supply the remaining 82% to 87%. In Dr. Crisp's basal buttermilk substitute the protein proportion was 28% of the total Calories, and even after the full amount of carbohydrate ultimately reached by Dr. Crisp for his patients had been added, the protein proportion was only to 20% and it was still under Grover Powers's condemnation as unsuitable as a complete feeding. In conclusion Dr. Graham said that Dr. Crisp's buttermilk substitute should be extremely valuable when the patient was dystrophic and atonic from protein starvation; it would enable the protein lost to be supplied in a reasonably assimilable form, but it should be replaced by a more satisfactory feeding such as three-ounce or four-ounce skimmed lactone syrup milk as soon as the critical emergency had passed. It was probable that blood or plasma transfusions and the use of other parenteral routes and techniques for replacement of deficiencies of fluid, protein and essential minerals were to be preferred to therapy by the alimentary route, as the latter was frequently unavailable because of vomiting or diarrhœa. The parenteral route, in emergency, was safer, surer and quicker, and it was always available.

ROBERT SOUTHBY (Melbourne) said that it was interesting to notice that under careful skilled supervision in the different States successful treatment with differing feeding mixtures was attained. He thought that the discrepancies might be reconciled on the basis of a consideration of the effect of modifications of the physical state of the protein of cow's milk, which was by no means the same as that of human milk. The effect of all the well known modifications was to make the curd finer and more flocculent. Dr. Southby concluded by quoting an aphorism of Dr. Robert Hutchison: "When the last trumpet sounds we will still be sitting around the table arguing about food."

F. N. LEMESSURIER (Adelaide) drew attention to the necessity to treat the child as a whole and not to concentrate only on the feeding mixture. For years he had used protein milk in the treatment of cœliac disease and regretted that it had become unavailable. The mixture suggested by Dr. Crisp might prove a satisfactory substitute for it along with liver therapy and additional vitamins.

J. COLEBATCH (Melbourne) said that Dr. Crisp had done a great service in showing them an alternative method for producing high protein feeding; adequate protein intake was of the utmost importance in infancy and during the growth of a child. A large amount of protein was lost in the diseases Dr. Crisp had mentioned as suitable for the use of the buttermilk substitute, but Dr. Colebatch expressed satisfaction with the results from lactone syrup milk and was entirely able to support what Dr. Boyd Graham had said. He added that it was easy to control the fat content by skimming or dipping the top cream off the milk. He also mentioned that the exponents of the Truby King system in New Zealand now used much higher protein mixtures than those advocated in the printed literature.

R. H. Crisp (Perth), in reply, said that he had had considerable difficulty in skimming accurately to determine the desired fat content of the milk for use in skimmed lactone syrup mixtures; as he had not been able to get satisfaction even with the help of capable sisters in hospital, he had been put off the practice of using it in the average household. He repeated that the formula he had introduced that morning was a temporary medicinal food, but admitted that he had said it could be used for long periods; he did not think that Grover Powers's figures should be used rigidly, as the protein pattern rather than the percentages was assuming more importance. In conclusion, he recommended the buttermilk substitute for special cases in which there were indications to use a high protein and low fat mixture.

### Pink Disease.

ROBERT SOUTHBY (Melbourne) read a paper on pink disease in which he reviewed his experience with the disease during the period from 1935 to 1947. He stated that the age incidence followed closely the period of the first dentition with the peak in the eighth, ninth and tenth months. With regard to distribution he had found it in equal proportions in the two sexes, but it occurred twice as often amongst only children as amongst those with others in the family; city children affected outnumbered country children in the proportion of two to one. The disease had appeared in phases of activity with intervening lulls. The phases had been distributed in patchy fashion throughout the urban and rural areas giving rise to so-called "islands" of the disease as described by Hutchison. Tachycardia even during the periods of sleep was an outstanding feature of the disease. In a high proportion of patients who died death was sudden with fulminatingly acute peripheral circulatory failure. Patient-to-patient infection and also family predisposition to pink disease and to virus infections had been shown in an appreciable number of cases in the series. Among the post-mortem findings had been respiratory tract infection and complications in a high proportion of cases and alimentary tract lesions in one-third of those patients who had died, but no evident morbid anatomical changes to explain the sudden deaths from acute peripheral circulatory failure. The high proportion of lesions in the alimentary tract might be significant from the ætiological point of view. The portal of entry of infection could be by that route; in that connexion present-day opinion on poliomyelitis was of interest. Laboratory investigations had failed to incriminate any bacterial organism as an ætiological factor. It had been found that differential diagnosis might be extremely difficult in the early stages of the disease. Sequelæ occurred in a small proportion of any large series watched for a number of years after the illness. Treatment depended on nourishment, rest and avoidance of intercurrent infections.

J. C. SPENCE (England), in opening the discussion, said that Dr. Southby's was a most comprehensive review and summary of the facts of pink disease. Professor Spence recalled that in 1921, at the end of one of the late Dr. Still's rounds, he had passed hurriedly by the patients in whom he was not particularly interested, accompanied by an American doctor who directed his attention to one of them, asking if the patient was one of those acrodynics of whom he had heard in his homeland. Professor Spence said that he was glad that he had been present that day to hear the discussion between Dr. Still and the American. He then showed on a lantern slide an analysis of 678 cases of pink disease occurring in his own experience between the years 1924 and 1948; the earliest age was two months, the peak was definitely at six months, and the oldest patient was aged two years and five months. A second lantern slide showed that there was no significant seasonal incidence. Professor Spence then said that though there was no direct evidence of contagion, successive members of a family were affected, and there might be a gap as long as eight years between two such cases. Further, successive cases within a

family nearly always occurred at the same age on each occasion. For instance, if the first child contracted pink disease at five months, another child in the same family if affected was also likely to show symptoms at five months. In addition there appeared to be statistical evidence that certain families were predisposed to the disease, though they had not been able to incriminate any predisposing illness. With reference to therapy, Professor Spence said that in the early days the condition was thought to be due to a vitamin *B* deficiency, and that vitamin was used, largely because of the ideas of Marshall Findlay. In 1922 he was in the research team with Findlay and Gordon, and one day Findlay came along and said that his rats had pink disease; that was very difficult to establish, and Spence did not think the publication by Marshall Findlay was sound; they had no substantial evidence of vitamin *B* deficiency and they could not prove it by therapy. Professor Spence went on to say that odds and ends about pink disease kept on turning up and this new one of Southby's was significant. He remembered seeing at Heidelberg a child, aged five years, whose condition had been diagnosed as pink disease; but the diagnosis in that case and in other earlier cases in the literature was questionable. Professor Spence was impressed by Dr. Southby's point that pink disease was following much the progress of poliomyelitis, which used to affect children of three years of age predominantly, and it was possible that pink disease could be due to a simple epitheliotropic virus.

LAURENCE HUGHES (Sydney) said that he was interested in the maps that Dr. Southby had shown and in the occasional family incidence, but would confine his contribution to a few brief references on the clinical side. Most people nowadays could recognize the typical cases; but there were many difficult atypical cases. He always made it a practice to use vitamin *B* in therapy, and recently Edgar Stephen, of Sydney, had reported with enthusiasm on the use of thiamine. Dr. Hughes was tempted to cross swords with Dr. Southby over the nomenclature; Swift, of Adelaide, had suggested erythrœdema originally, but had stated that he was not satisfied with it, as true œdema was not present. Snowball, of Melbourne, had referred first to the "raw meat" hands and feet, and the name pink disease was first used by Clubbe, of Sydney.

H. BOYD GRAHAM (Melbourne) thanked Dr. Southby for his acknowledgement of assistance, but said that it had been little enough in the circumstances, as Dr. Southby had undertaken an enormous piece of hard work to provide an analysis of a large number of case histories of pink disease. However, Dr. Graham wished to dissociate himself from Dr. Southby's views about the likelihood that a virus might be the causative factor in pink disease. Dr. Graham then said that recently he had had under serious consideration a new theory which seemed to fit the facts. In that most baffling disease, the age period affected seemed to him to be the most outstanding point from which to start in ætiological studies of the disease. He then advanced the theory that pink disease was a metabolic disease, probably an anomaly in the metabolism of protein, and perhaps it could be narrowed down to delay in the appearance or in the concentration of an enzyme which normally protected the body from histidine damage. To illustrate the kind of defect he had in mind, Dr. Graham referred to the fact that it was inadvisable to give starch to very young babies because the ptyalin was at first absent and later present in insufficient quantity, though its concentration could normally be hastened by the cautious introduction of starch into the dietary. It was a possibility that in somewhat similar fashions the antihistidine enzyme, though normally present when complex proteins were introduced into the dietary, might occasionally be delayed or be inadequate to protect the body from histidine damage for many months. Dr. Graham regretted that time did not permit of the elaboration of the theory; but he wished to record that he had applied the idea in therapy with apparent benefit in four cases by using "Benadryl" elixir, giving as much as one drachm five times a day to a baby of nine months. Infections and vitamin deficiency syndromes frequently complicated the course of the illness, as was to be expected in any serious nutritional disorder.

F. KINGSLEY NORRIS (Melbourne) said that he wished to comment on the only feature of a case of pink disease which was more miserable than the child; by that he meant the parents. As a measure in therapy of the parent he had at times found it necessary to remove the child, but he would not do so otherwise. They must consider the parents of a baby with pink disease and allow for their tiredness and their uncertainty; the parents should be informed of what was likely to be the duration and the course of the disease. They must not forget the acute anxiety and misery of the parents.

F. N. LEMESSURIER (Adelaide) thanked Dr. Southby for referring to the late Dr. Swift, on behalf of Dr. Swift's relatives. Dr. LeMessurier said that he had known and worked with Dr. Swift. He asked Dr. Southby to say how long the illness could last.

F. M. BURNET (Melbourne) said that Dr. Southby's demonstration had put the epidemiology of pink disease on a much sounder basis. He was inclined to disagree with Dr. Graham's theory, but was much impressed by Dr. Southby's case for a virus. With Professor Spence, Professor Burnet was struck by the parallelism of poliomyelitis in the early days and the analogy with herpes stomatitis. In an orphanage, infection with typical stomatitis had been universal. Poliomyelitis and herpes stomatitis were two typical infantile virus infections. Pink disease might be due to a microorganism, probably a virus widespread in the community, normally subclinical with genetic differences in susceptibility, and it might mutate to minor differences under varying conditions. As a complete speculation, Professor Burnet wondered if pink disease was *herpes simplex* in children who reacted with great difficulty. He asked Dr. Southby whether he had any evidence of herpetic stomatitis among the children with pink disease. If it was a virus disease, the long drawn out nature of the disease was unusual. If it was a virus disease it would be of great interest, as children lacked the capacity to produce the immune response.

Robert Southby (Melbourne), in reply, thanked those present for their reception of his paper. He was interested in Professor Spence's age of onset chart, which was almost the same as his, though the maximal peak was in the ninth month instead of the sixth. With regard to the onset, Dr. Southby said that the mother might have moist, bloodshot eyes and running nose some ten days before the baby was similarly affected. He said that he was also interested to hear Professor Spence's sceptical attitude towards argument from analogies; but Dr. Boyd Graham's theory offered possibilities, and Dr. Hughes's emphasis on the occurrence of atypical cases of pink disease was yet another analogy with poliomyelitis. At a clinical meeting many years earlier, Dr. Southby had heard the late A. Jeffreys Wood discuss the nomenclature with Reginald Webster, saying positively that it was Snowball who called the babies "pink". Major-General Norris had emphasized the need of rest for the parents as well as for the baby, and with that attitude he agreed. Dr. Southby informed Dr. LeMessurier that sometimes the illness ran for longer than twelve months, and some patients went to eighteen months or even two years before they could be considered to be fully recovered.

Dr. Southby then said that Professor Burnet had kindly promised to try to find the virus. With reference to herpetic stomatitis, Dr. Southby said that many of the babies had stomatitis, but it was not noticeably herpetic. In conclusion, Dr. Southby said that he believed that pink disease was not due to a vitamin deficiency, because he would expect a rapid response when the vitamin was used therapeutically. Some of the babies might be manifesting a lack of vitamin *B* owing to the infection. Some of the patients who recovered quickly might never have had true pink disease, but merely some condition simulating it in the early stages.

### Kidney Pain in Children.

F. L. GILL (Perth) read a paper entitled "The Distribution of Kidney Pain in Children". He said that, whereas the majority of adults (92 in a series of 100) referred kidney pain to the renal angle, it had been found that 30 children in a series of 32 referred their kidney pain to the

abdomen only. It was suggested that the change to the adult type of distribution took place at about puberty in all except about 8% of people, who retained the infantile type throughout life.

DOUGLAS MCKAY (Adelaide) thanked Dr. Gill for the observations he had made about the age distribution of kidney pain in children. He said that pædiatricians were constantly confronted with children suffering from abdominal pain often around or near the umbilicus, and they had to attempt to find the cause. There were a vast number of cases in which they had great difficulty in deciding why the children had the pain. Dr. Gill had stressed the necessity for renal investigation, and his observation might enable them to make a diagnosis in some previously troublesome cases. Dr. McKay went on to say that he was impressed by the fact that children did not localize pain accurately, and until about ten years of age a child did not seem to be able to be definite about it. Perhaps Dr. Gill's observation about renal pain might be a special example, indicating that a general change in the appreciation of pain normally occurred at about that age. Dr. McKay asked Dr. Gill to supply further information about the proportion of cases in which, in spite of his investigations, he was unable to find an adequate cause for the abdominal pain.

ROBERT SOUTHBY (Melbourne) said that the lesson to be learnt from Dr. Gill's observations was that chronically recurring "bellyache" was not to be regarded as appendiceal, and that pyelograms should be made in such cases.

A. R. EDMONDS (Perth) said that, having investigated a large number of children, he still found the vast majority not to show signs of any renal lesion, and he was left in the air as to what to do about them. He asked Dr. Gill to give a lead as to which patients should be investigated for renal lesions, as one of the commonest complaints encountered in the out-patient department was "bellyache". He wondered whether Dr. Gill could indicate anything in the history or any physical signs to show which of the subjects should be investigated from the renal angle.

A. MURRAY CLARKE (Melbourne) thanked Dr. Gill for focusing attention on the renal origin of abdominal pain, and expressed surprise at the number of cases he had collected; it was so large that Dr. Clarke wondered whether the occurrence of stone in children in Western Australia was related to any local conditions. He had himself been interested in recent times to find that universal mesentery or volvulus caused intermittent abdominal pain, and had frequently investigated abdominal pain exhaustively without discovering more than an occasional instance of renal calculus. At abdominal operations he had found on many occasions that the appendix and other viscera were not to blame for the symptomatic pain which had led to the laparotomy, but the intermittent pains disappeared afterwards. He had often found at the operations the usual retrocaecal adenitis, and had felt that the exploratory operation was justifiable on account of the improvement afterwards; but he was at a loss to explain the disappearance of the abdominal pain, and thought it regretable that those exploratory operations had to be undertaken when so many methods of investigation had become available.

F. L. Gill (Perth), in reply, said that the point had been raised that the young children might not be able to describe their symptoms sufficiently accurately and that that might account for the variations in localization at different ages. Naturally he had found many of them that were vague and indefinite about the symptoms. He exercised great patience and pressed for an answer to his inquiries about where the child felt the pain, taking care not to make his question a leading one. Ultimately the child would place a hand on a part of the abdomen and say that the pain was just there. At that stage Dr. Gill would ask whether the child had also had a pain in the back, and he usually received a definite answer that there was not a pain in the back. Careful history taking was obviously the best guide to the need for renal investigations. There was something dramatic about the onset of the pain; the child usually looked ill, being pale and sweating and liable to vomit suddenly, and often vomited; then as the colic passed the child would say he was right again and be prepared to get up and move about. Such attacks, especially when intermittent or recurrent, warranted investigation along the lines he had indicated. Dr. Gill then said that he had had under consideration the wider concept that the reno-colic or intestinal reflex might be a notch lower in children, and that referred pain from the renal pelvis of a child might be directed to the place of referred pain from the upper part of the ureter of an adult. If after the appendix had been removed expectantly the child returned with identical attacks, it was ridiculous to lay the blame on adhesions; the renal origin of the pain should be suspected. Retrograde pyelography could be performed on most girls of any age without general anæsthesia, and they could feel the distension of the pelvis and indicate the localization of the resultant pain. In reply to Dr. Murray Clarke, Dr. Gill said that they had been looking carefully for renal calculi in Perth, and he did not think that climatic conditions could be a significant factor if more cases were found there. He presumed that the ileocaecal adenitis mentioned by Dr. Clarke was at times of tuberculous origin, and as was well known with tuberculosis peritonitis, "letting in the sunlight" often removed the symptoms and initiated improvement in the patient's condition. In other cases improvement after laparotomy could be explained by the realization that perhaps the patient was going to recover anyway. In conclusion, Dr. Gill said that he had divided over 350 aberrant vessels without any deaths or need for a secondary operation. He had been worried by secondary hæmorrhages on two occasions, and in two other instances fistulæ had formed. An aberrant vessel usually started trouble before the subject was five years of age, and if not then she might go as far as the third or fourth decade without symptoms. If the early trouble was not treated surgically, great kidney damage resulted, which led to nephrectomy in adult life.

### Hyperkinetic Babies.

H. BOYD GRAHAM (Melbourne) read a paper entitled "Hyperkinetic or Over-Active Babies". He discussed the development of the personality pattern in infants and described the clinical characteristics of hyperkinesis in infancy. The babies were often slenderly fashioned, light in weight at birth and a little premature. Soon they displayed an over-reaction to stimuli and evidences of immaturity such as neuro-muscular incoordination, spasticity, high metabolic rate and undermyelination of nerves. They were often first children with an unstable parent, living in a shared home. Opposition to breast feeding, unreasonable crying and vomiting occurred, the symptoms appearing soon after birth and increasing when mother and baby left the maternity home. Feeding difficulties and dyspeptic symptoms followed. The nervous tension of the parents increased, which aggravated the situation and in the end harmed the baby's prospects. Dr. Graham described the further development of these children and pointed out that, though they were hard to bring up, the extra effort required yielded rich rewards because of their spirit and intelligence. He classified the condition into three groups: (a) simple hyperkinesis, usually associated with underfeeding, and with the developing evidences of over-activity and over-stimulation and their consequences which might simulate other diseases; (ii) spasmodic hyperkinesis, in which neuro-muscular incoordination of the alimentary tract was the main feature; (iii) nervous hyperkinesis, in which were found various syndromes illustrative of over-excitability of the entire nervous system or predominantly of one or other of its main divisions. Discussing the management of hyperkinesis, Dr. Graham said that the main principles were to feed the baby properly, to reduce external stimuli, to allay anxiety and, when indicated, to prescribe sedatives and antispasmodics effectively in addition to the therapy required for the specific complaint which brought the baby into the doctor's care.

LAURENCE HUGHES (Sydney) said that Dr. Boyd Graham's address was indicative of the changing face in modern days of the concepts of the causes of disease; the bacterium

and the virus would continue to remain the main ætiological factors, but there was also a socio-economic factor. Disease was actually the abnormal reaction of the total individual to his total environment; surely that applied to hyperkinetic, hypertonic or nervous individuals, and Dr. Graham had mentioned some of the syndromes due to neuro-muscular incoordination and nervous factors. Dr. Hughes recalled that it was after the first world war that Cameron had introduced the concept of the nervous child, disturbed in the general state of social unrest. It was possible that factors arising from the recent war had given rise to socio-economic conditions that might be responsible for the increased prevalence of those disorders at present. Hyperkinesis in infancy was a definite clinical entity, and the symptomatology was often imitative or suggestive of an underlying organic basis. It was the doctor's first duty to exclude organic disease and to treat it if it coexisted with the hyperkinesis. It was necessary for the doctor to do what he could to remove external stimuli, to use all his wiles to see that the baby got proper nutrition, and to use sedatives when necessary.

F. N. LEMESSURIER (Adelaide) said that he was bewildered by Dr. Graham's presentation, but felt certain that he was referring to what he (Dr. LeMessurier) was in the habit of calling the hypertonic baby, so frequently seen especially during the economic depression several years before the recent war. There was undoubtdly some constitutional or hereditary factor also in the make-up of the hypertonic child. A striking feature was that the child smiled as soon as he came under the doctor's observation. Dr. LeMessurier then said that he used to use butter-flour mixtures for those babies, but had been forced not to use them lately. He had also at times had to remove the child from his environment. He had since found that ordinary sweetened and diluted cow's milk mixtures were satisfactory for them combined with the use of sodium phenobarbitone; he warned the parents that the sedative would have to be continued at least till the baby reached the age of six months. He considered that sudden starting cry and the throwing out of the hands were expressions of the "fear reflex"; it was a picture that was seen frequently in pædiatric practice.

F. KINGSLEY NORRIS (Melbourne) congratulated Dr. Graham on presenting for discussion the commonest pædiatric problem. He said that he was in the habit of using the term "tight-rope child" in describing the type, and the worst ones were red-headed. The child's make-up led to over-stimulation, and if the relations and the doctors and the nurses stopped worrying, the babies would lose some of the over-stimulation. He refused to examine such a child professionally unless the father attended. He protested against the selection of phenobarbital as the sedative; in his experience chloral hydrate was much more dependable, but it must be given in adequate dosage. The children burned themselves out and must be refuelled frequently, and sugar was indicated as the additional fuel.

R. A. J. STANTON (Perth) said that he was in complete accord with the previous speakers, but wondered how far they could go with preventive measures. Many of the babies reacted unfavourably to the conditions they found at home on leaving the maternity hospital. The mothers must be educated better, and it was a great shame that parents with only one or two children could not get priority for houses.

D. G. MCKAY (Adelaide) said that everyone present could readily recognize the condition, and knew the vomiting, uncomfortable babies whose mothers were so sure that the discomfort arose from the feeding. He had formed the impression that the babies were less comfortable with acid feedings and more comfortable with baked flour mixtures combined with the use of phenobarbitone and chloral hydrate.

ROBERT SOUTHBY (Melbourne) supported what Major-General Norris had said about the phenobarbitone; he, too, thought that it seemed to make the babies more active. He attributed the prevalence of the syndrome to the mechanical improvements which had speeded up the life of the modern community; the babies seemed to be afraid to sleep in case they might miss something while asleep. The babies were not allowed to cry in case they might disturb a neighbour's pet dog or otherwise interfere with other people's comfort.

R. H. CRISP (Perth) said that he called the children "neuropaths" and that they cried out for lots of sugar; he approved of giving them such things as glucose and additional vitamin *B* preparations.

### Human Beings and their Young.

J. C. SPENCE (England) spoke on human beings and their young. He said that he wished to keep free from sentiment and to look at the subject as scientifically as possible. It was, however, difficult for anyone in his studies of family life to assume the detached attitude of the scientific observer or the natural historian, on account of several difficulties. The first was that each individual was influenced by his own emotional experiences of childhood in family, in school and in other institutional associations. Another difficulty was that in a branch of human biology with the scientific study of the family as its object, the experimental method could not be used. The third difficulty was that it was a long term study. Professor Spence then said that there were few people in a position to make the detailed studies, but the family doctor was well placed to undertake them. His opportunities were better than those of the child guidance clinics or the consultant psychiatrists, who saw only the breakdown accidents. Therefore in medicine some should turn their attention as scientists to the study and observation of human beings in relation to their young and of the young in relation to each other and to other human beings. That would lead on to the study of the structure and function of family life and of other institutions in which children were congregated. All those responsible should ask themselves to what extent their particular institution was fostering the development and maturation of the young, and to what extent it was preventing or perverting that process. That responsibility was laid on doctors in charge of wards, particularly in long-stay hospitals. It was necessary to have a clear conception of three objects: physical maturation, emotional maturation and intellectual maturation. It was easy to assess physical maturation by simple measurements, but emotional maturation and intellectual maturation were difficult to estimate, and yet they were of greater importance than physical maturation. Breeding for mere bulk had no particular merit beyond the "blond beast" type of civilization; a life of harmonious human relationships guided by reason was the goal in fostering the development of the young. The incidence of the emotionally and intellectually mature in the community was the index of civilization; but he wondered how many reached full maturation. Professor Spence then advocated the extension of the field of pædiatrics to include the whole of their maturation studies. They should not concentrate too much on weight charts or intelligence quotients. In excessive concentration on physical health, emotional and intellectual development might be neglected; in excessive forcing of intellectual development, the development of character might be undermined. He said that his first postulate was that the aim of the pædiatrician must not be limited to the physical welfare of a child and to the cure of its diseases; he must do those things in such a way that he would not diminish a mother's capacity to be a child-bearing and child-rearing instrument. In the broad field of human biology a wise mother was of more value than a wise doctor. Professor Spence then referred to what medicine could do to foster wisdom and mature experience in motherhood; he said that by that he meant a lot more than a sound knowledge of infant feeding. A mother had to get her apprenticeship in the family life of her own childhood, in a craft which had been carried on from generation to generation by the transmission of the craft lore from mother to daughter. The family was Nature's device for the development of children, and without a full apprenticeship in family life maturity was rarely attained. In family life the most important experiences to children were the adventures of emotional life within the protectorate of the parents' guidance and sanctions. Emotional experiences could be suffered or enjoyed without

permanent harm to personality, and personalities could not be fully developed without those exercises and experiences; but there must be parental sanction and a family code of conduct. Under that management children should have free access to other children in enterprises and in play, and the enterprises and play should not be scrutinized too much by adults. All children must have the opportunity to move freely with children of other age groups. Professor Spence then mentioned three handicaps to the free interchange of experience in modern childhood. The first was the limitation of the family by birth control, which diminished the chances of experience and emotional development to the one or two children within that family. The second handicap was the habit of congregating children too much with children of their own groups, as in nurseries or at nursery schools. The third was the ambition of parents, who, in order to secure training of children for economic purposes, forced them too much into their horizontal age layers in schools and other institutions with their techniques of controlled behaviour.

Professor Spence then discussed the maternity hospital. He said that nearly all babies started life nowadays in maternity hospitals. The experience of childbirth and of child care in the first few weeks was one of the most important experiences of any woman in her journey to mature and wise motherhood. Obstetrics should aim therefore at three things: the safe delivery of the mother, the safe delivery of the child without physical harm, and the delivery and post-natal care of mother and child in such a way that she established a proper relationship with her child as quickly as possible and in a manner which would make her glad to undergo the experience again. The logical conclusion was the arrangement of maternity hospitals in which a mother would have her baby born in the intimacy of her own room, and in which she might have the companionship of her husband and her mother when she desired. The child's cot should be at her bedside night and day, and she must have the opportunity to pick up, comfort and enjoy her child whenever she so desired. When the woman left the hospital with her baby, the family doctor must continue through the subsequent months to foster the relationship of mother and child. Professor Spence said that he had worked in maternity hospitals where those principles were applied, and they had the full support of the nursing and obstetric staffs. He went on to say that breast feeding was valuable in the scheme, helping to mature the mother and develop her character, and that it gave her the necessary experience for future good relations with her child. The idea could be carried much further than the maternity hospital. Premature, injured and sick babies might have to be kept away from the mother for a few days. If the child fell ill subsequently, the mother should go with him to hospital and nurse him there. The mother's capacity to deal with the rearing of the child was enormously increased by those experiences.

### Penicillin and Streptomycin in Influenzal Meningitis.

JOAN TOM and STEPHEN WILLIAMS (Sydney) presented a paper on the use of penicillin and streptomycin in the treatment of *Hæmophilus influenzæ* meningitis based on the results of treatment of a small series of patients at the Royal Alexandra Hospital for Children, Sydney. They stated that the two antibiotics penicillin and streptomycin were both effective in the treatment of *Hæmophilus influenzæ* meningitis. Clinical trials with penicillin at their hospital had not been extended to provide a series of cases for detailed analysis, but they had accumulated sufficient laboratory and clinical evidence to show that, in adequate dosage, penicillin could be a useful addition to the existing methods of treatment. Streptomycin, however, seemed to be the antibiotic of choice on the results so far obtained in the series. It was simpler to administer than penicillin, involving only one intrathecal injection per day; no toxic effects had been seen as a result of the dosage employed in their series; and it had demonstrated a remarkable capacity to terminate infections abruptly and completely. Its usefulness was not limited to the mild conditions, but might be extended with considerable success to severe infections, often of long duration and even to those occurring in young infants.

J. PERRY (Melbourne), in opening the discussion, said that the method of treatment adopted by Dr. Joan Tom and Dr. Stephen Williams was essentially the same as that used by Dr. Stanley Williams in the Children's Hospital, Melbourne. The number of cases was insufficient to give significance to a comparison of results. He asked Dr. Tom what measures were used in the management of a case of purulent meningitis, in which no organisms were seen in a smear of the material obtained from the first cerebro-spinal fluid examination. Sometimes that state of affairs resulted in a delay in the institution of specific treatment until bacteriological results were forthcoming. At the Children's Hospital, Melbourne, the use of the hæmagglutination test described by E. V. Keogh and F. Warburton was of great value, as it enabled the diagnosis to be made with reasonable certainty within an hour of obtaining the cerebro-spinal fluid. Dr. Perry cited a case to support the reliability of the test, in which it was possible to say that suppurative meningitis was associated with a double bacterial infection by *Hæmophilus influenzæ* B and a pneumococcus, whereas only a pneumococcus had been isolated.

ROBERT SOUTHBY (Melbourne) said that he thought that Dr. Tom would agree that the series was too small for use in drawing conclusions on the finer points. He stressed the importance of considering the results separately in the age groups under and over two years, which were approximately equally represented in the series. The younger babies were often ill for a couple of days or more out of hospital on account of a mildly febrile state with the occurrence of vomiting or of diarrhœa, and the mistaken assumption that the illness was a bowel infection. It was necessary to realize that pallor in a sick baby was an important indication to perform lumbar puncture. Dr. Southby then discussed the occasional occurrence of hemiplegia as a complication and the subject of dosage of the specific antiserum which was used. He said that at Melbourne it was customary to give 60 millilitres of it slowly by the intravenous route, well diluted in saline solution. He added that frequently the serum was given once more if no great improvement was discernible within thirty-six hours of the initial serum therapy. Care had to be exercised to overcome the difficulties arising from hypersensitivity to rabbit serum, and they had had several instances of hæmolysis, some of distressing severity; those reactions could be avoided by slow cautious administration under general anæsthesia. Dr. Southby then directed attention to the relative frequency of influenzal meningitis in young subjects, which had been particularly observed in Victoria during the past three or four years; the number of cases was suggestive of the possibility that the disease might assume epidemic proportions. In conclusion he expressed the opinion that in the future they might be able to cure the patients by using streptomycin or some such antibiotic alone and by the intramuscular route, but at present it was not considered that specific therapy and antibiotics given by the intrathecal route could be relinquished with safety; they thought that the patients should have sulphonamides and that penicillin was not so useful as streptomycin, and that serum must also be used.

F. N. LEMESSURIER (Adelaide) said that they were also using streptomycin in South Australia, and he hoped that the time would come when resort to frequent performance of lumbar puncture would be materially reduced.

Joan Tom (Sydney), in reply to Dr. Perry, said that at the initial diagnostic lumbar puncture operation they injected penicillin as a routine procedure after withdrawal of infected cerebro-spinal fluid. They then awaited the reports on the biochemical and bacteriological investigations for clarification of the exact ætiology. The penicillin subserved the function of carrying the patient on till the specific therapeutic indications were defined.

### Conclusion of the Session.

At the conclusion of the meeting the President of the Section of Pædiatrics, with the unanimous concurrence of

those present, decided to send greetings to Dr. H. Douglas Stephens, and to send a letter of condolence to the widow and daughters of the late Dr. John Whyte Grieve.

A vote of thanks was passed to Dr. R. H. Crisp and Dr. A. R. Edmonds, of Perth, for organizing the work of the section so admirably.

*(To be continued.)*

# British Medical Association News.

## WORLD MEDICAL ASSOCIATION.

THE following letter is published at the request of the Federal Council of the British Medical Association in Australia.

To All National Medical Associations:

The Council of the World Medical Association, at its recent meeting in New York, discussed providing a list of medical families in each country who would be prepared to receive a member of a foreign medical family. These visits, if desired, might be arranged on the basis of exchange visits.

It was resolved by the Council of the World Medical Association to request each member association to invite, through its journal, communications from doctors who are prepared to welcome a visit from a member of a foreign medical family, either child or adult.

The list of medical families prepared to receive such visitors in each country could then be made available to other countries or individuals desiring this information.

It was the hope of the Council that this information, if compiled by the editors of the national medical journals at an early date, would provide available lists for the holiday periods of this year.

Sincerely yours,
LOUIS H. BAUER, M.D.,
Secretary-General, World Medical Association.

2, East 103rd Street,
New York 29, N.Y.

# Special Correspondence.

## NEW ZEALAND LETTER.

FROM OUR SPECIAL CORRESPONDENT.

THE report of the Medical Services Committee has been tabled in the House, and has been discussed in the Press. but not so far by the profession or by Parliament. The committee was composed of four members from the British Medical Association, and three (two medical) from the Health Department, with a legal chairman. Its object was to advise the Government about the present medical scheme, which has been seven years in operation, and to suggest ways and means of overcoming admitted abuses. It thus represents the first major effort to overhaul the system, but purposely omitted many major aspects such as hospital reform, nursing, medical education, and the Health department. With regard to future administration, committees for continuous advice in policy, discipline and ethics are proposed for the first time, the onus to be placed largely on the medical men. In general practitioner services, the present fee-for-service scheme is to be retained, and a number of minor adjustments and simplifications are recommended. The report debates capitation, salaries, and combinations of these, but finds them unacceptable for various reasons. Specialist services constitute the only major gap remaining in the New Zealand scheme. The report proposes a fee-for-service system, an extension of "open" (part-time) hospital appointments to help to attain the greater number of specialists alleged to be required, and the construction of a roll of acknowledged specialists, based on higher qualifications, experience *et cetera*. Many details are left for negotiation. Reasons for the soaring costs of pharmaceutical benefits are examined, and the imposition of a partial payment on the patient is proposed.

It will be interesting to observe the reception given to these proposals by Parliament and the profession, and what, if anything, will be done. The difficulty of such piecemeal repair work is obvious to anyone who takes a broad view of the whole system of health services. There never has been any attempt to synthesize and coordinate plans for the whole, and until this is done essentially to the satisfaction of the parties concerned, there is little prospect of progress.

# Correspondence.

## A CONFERENCE OF RADIOLOGISTS.

SIR: My attention has been drawn to the report of the discussion at the Radiological Conference held in May, 1948, at Canberra, published in the issue of September 4, 1948.

I am quoted in commenting in regard to the treatment of plantar warts that "plastic surgeons are still showing cases of necrosis at clinical meetings due to radiation treatment of this condition". I feel that this statement in itself has produced a wrong impression, for I went on to say that these cases were shown as representing the not uncommon result of irradiation.

It is perhaps natural that a plastic surgeon should gather such an impression, for he sees only the isolated bad result, and the difficulty of its management produces an exaggerated idea of the incidence. It is probable that an undertaker would admit to an equally poor opinion of the efficacy of medical and surgical treatment in general.

The great number of cases of plantar warts treated by a proper technique of irradiation shows how successful and safe is this form of treatment.

Yours, etc.,
ADRIAN JOHNSON.

185, Macquarie Street,
Sydney,
September 13, 1948.

## TINTED SPECTACLES.

SIR: I wish to call attention to the dangerous last paragraph of Dr. D'Ombrain's letter in which he advises practitioners to instruct their patients to procure the darkest spectacles obtainable through which to view the eclipse.

At a recent council meeting of this society it was decided to issue a warning notice to the public, in which *inter alia* it is stated that: "Viewing the eclipse with the naked eye, through spectacles or with any kind of sun glasses . . . will burn the delicate retina of the eye and cause permanent damage to sight in a matter of seconds."

Fortunately the last eclipse occurred on a cloudy day, but the previous one produced a crop of permanently damaged retinæ. It is hoped therefore that the medical profession will advise the public that it is not safe to look at the eclipse of the sun at all.

Yours, etc.,
ARNOLD L. LANCE,
Honorary Secretary, the Ophthalmological Society of Australia (British Medical Association).

27, Commonwealth Street,
Sydney,
September 13, 1948.

## BRONCHIECTASIS.

SIR: In the journal of August 28 the report of a meeting of the Victorian Branch held at Warragul on July 17 includes a discussion on a case of bronchiectasis which, to my mind, adds confusion to the management of this admittedly difficult condition. I would suggest that the following facts should be borne in mind when the treatment of any patient with bronchiectasis is under consideration.

1. Established bronchiectasis is symptomatically progressive and is incurable except by pulmonary resection.

2. Nasal sinusitis is a frequently associated infection. Radical sinus surgery in these cases may result in slight transient symptomatic improvement. If pulmonary resection is to be done, radical sinus surgery should be withheld till after lobectomy. If it is done first, the sinuses always become reinfected, and even if the bronchiectasis is later relieved by resection it is difficult to relieve the reinfected

sinuses. It is not unusual for sinusitis to resolve spontaneously when reinfection from below ceases after lobectomy.

3. Pulmonary resection cures bronchiectasis if all the diseased lung tissue is removed. Even when this cannot be done, removal of grossly infected collapsed lobes gives considerable symptomatic improvement.

4. No case should be considered for resection until all possibly involved segments of the lungs have been outlined by lipiodol.

5. Sojourn in a warm dry climate may cause considerable symptomatic improvement, but has no lasting effect on the course of a case of developed bronchiectasis. A period of rest in hospital with general hygienic measures and postural drainage with or without penicillin has a very striking effect on the patient's general condition and results in very great diminution in cough and in the amount of sputum, but does not stand up to a return to normal living conditions. A *régime* of this type should be a routine preliminary to pulmonary resection.

6. Lobectomy is a major operation, but it should not be a hazardous one, and properly conducted it is no more formidable to the patient than many other routine procedures. In 1947, Mead and others reported a series of 196 lobectomies performed in the American Army at the Kennedy General Hospital Chest Surgical Centre, with one death; 160 of these were for bronchiectasis and the death was in one of these cases. In my own series of over 200 lobectomies, there have been eleven deaths, but if operations performed by techniques not now considered satisfactory are excluded, there have been 131 lobectomies with three deaths. Many similar series have been reported in the literature and other surgeons in Australia are producing similar results.

7. Of all patients operated on for bronchiectasis, 60% or 70% achieve complete symptomatic cure. In most of the others where some bronchiectatic areas have to be left behind, considerable alleviation is achieved. Cure is possible so long as one lung or both upper lobes are free of the disease.

Yours, etc.,
C. J. OFFICER BROWN.

12, Collins Street,
Melbourne,
September 10, 1948.

## AN EPIDEMIC OF GASTRO-ENTERITIS IN INFANTS, WITH SPECIAL REFERENCE TO TREATMENT.

SIR: In an earlier paper (THE MEDICAL JOURNAL OF AUSTRALIA, July 17, 1948) by Dr. I. G. Philpott and myself favourable results were reported in the treatment of infection with *Salmonella bovis mortificans* in infants, during an epidemic in Brisbane, with the use of amino acids and streptomycin. Clinical experience with these measures has continued to be favourable.

Our purpose in making the report was to indicate treatment given and not to discuss epidemiology of the disease. However, it was well recognized at the time that the results reported could not be attributed to treatment alone, but also to a natural "burning out" of the epidemic. Unfortunately it would appear that this fact was not made sufficiently clear to the reader.

A recent analysis of the epidemiology of the disease (I. M. Mackerras, personal communication) indicates that the epidemic had already "peaked" before the amino acids and streptomycin were being used extensively. It is well known that under such circumstances caution is necessary in interpreting results of therapy and I feel that this fact should be made clear so that a conservative attitude may be adopted in assessing the results as published.

Yours, etc.,
GRANTLEY S. STABLE.

Children's Hospital,
Brisbane,
August 31, 1948.

## WALKING ON WATER.

SIR: Recently in the newspapers there have been several reports of persons who have claimed the ability to walk on, or more correctly in, water.

Patrons of a certain swimming baths in Sydney may remember a regular early morning visitor who could accomplish this feat, and in addition who was able to sit in the water and at the same time read a newspaper.

I was informed by the medical attendant of this man that he was suffering from *osteitis deformans* (Paget's disease of bone). This is a condition where the bones increase in volume and decrease in specific gravity. In the normal individual with partially inflated lungs, the body will usually float in salt water; therefore, it is not surprising that in *osteitis deformans* it becomes sufficiently buoyant to be able to perform the feats mentioned.

In the cases reported in the daily Press which have come under my notice, the individuals concerned were in an age group in which *osteitis deformans* is not an uncommon occurrence, and one wonders whether these people may have been suffering from this disease.

Yours, etc.,
EBEN H. HIPSLEY.

Canberra,
September 1, 1948.

## PULMONARY TUBERCULOSIS IN SOUTH AUSTRALIA.

SIR: I have to thank Dr. Cyril Swaine for bringing to light some points in my article "Pulmonary Tuberculosis in South Australia".

In regard to the figures for notifications of cases *per annum*, it is indeed a pity that an accuracy of greater than 85% is not obtainable. However, tuberculosis being what it is, it would be impossible for the Central Board of Health to guarantee a 100% accurate figure; in the circumstances an error of only 15% is a reasonably good result.

What I did not perhaps emphasize sufficiently was the fact that this figure of 85% was "fairly consistent since about 1915". If an error is consistent, it can be allowed for. In this case, the error of 15% is not large—probably not much more than the error in the death-rate figures—and it has been ignored. The point is that an error of even 15%, so long as it was a consistent error, would lead to the same shaped curve in line C in Figure II of my paper. And the point about this curve is that since 1915 it has not fallen. Hence one can say, as Dr. Swaine has phrased it so well, "when a patient's disease has progressed to the stage where it produces ill health and he is notified as suffering from pulmonary tuberculosis his chances of recovery are not good". In fact over the whole of the population of South Australia, the chances of recovery are no better now (that is, 1944) than they were in 1915; and that chance has been approximately one in three.

While we pray for a cure, however, we may act to prevent tuberculosis or to identify it so soon as to make notification unnecessary and recovery reasonably certain: to diagnose, in other words, well before the patient is "ready to cross the Styx". When the whole population has available the same facilities for diagnosis and treatment as are provided for ex-service and service personnel, and then the number of cases requiring notification should fall very greatly, and the battle against tuberculosis should enter another stage.

Yours, etc.,
R. B. LEWIS.

St. Mark's College.
46, Pennington Terrace,
North Adelaide.
September 7, 1948.

SIR: Cyril Swaine seems so hurt at the figures published by R. B. Lewis concerning deaths from and notifications of pulmonary tuberculosis in South Australia during the years 1900 to 1944 that one might be forgiven for imagining that he carried the whole burden of responsibility on his own shoulders for the state of affairs disclosed.

Mr. Lewis has dealt with facts as obtained from the statistical records, and no fault can be found with those facts. Of course, it is true that not every case of pulmonary tuberculosis has been notified, just as it is true that not every death from pulmonary tuberculosis has been disclosed as such. It is quite likely true, as Mr. Lewis has pointed out, that the probable error in one set of figures to a large extent cancels out the probable error in the other, and so the overall picture is much as he describes it.

It can be taken as a general rule that notifications in the past have been made almost solely as a result of finding tubercle bacilli in the sputum. I have taught for many years that once a patient had a "positive" sputum, he had less than an even chance of recovery. It seems I was rather optimistic and that really he had only one chance in three of recovery. A few years ago D'Arcy Hart, in his Milroy lecture, made a similar observation.

Dr. Swaine would have us base our figures on minimal lesions, and it is a quite fair assumption that with earlier

diagnosis and more efficient treatment the future picture may be quite different. Mr. Lewis was not dealing with the future picture; he was dealing with the conditions as they existed in South Australia from 1900 to 1944. I see nothing at all in Dr. Swaine's contentions to shake the basic truth conveyed in Mr. Lewis's figures, namely, that once pulmonary tuberculosis is firmly established it is very difficult to eradicate; and when Dr. Swaine has lived a little longer he may more fully appreciate this fact.

Mr. Lewis's article was not intended as a stricture on the failure of medical treatment. It was merely a presentation of figures compiled from available records, with some deductions therefrom. It does, however constitute an argument in favour of prevention, and, if that is not wholly attainable, in favour of earlier diagnosis and more efficient treatment. As such I believe it to be a very timely contribution, which we should not belittle, as Dr. Swaine would have us do. I believe that Dr. Swaine's views are much the same as my own and that we both feel the main hope for the future lies in prevention and in the recognition and timely treatment of the early lesion. I have had the misfortune to practise during the years 1914 to 1944, and it is the simple truth, as Dr. Swaine has concluded, that many patients are "almost ready to cross the Styx" when their disease is first diagnosed. Let us hope that the next thirty years will fulfil all Dr. Swaine's desires for early diagnosis and treatment so efficient that the death rate from tuberculosis will be reduced to negligible proportions.

Yours, etc.,

D. R. W. COWAN.

163, North Terrace,
Adelaide,
September 11, 1948.

## CHARLES NICOLLE.

SIR: It is proposed to recognize the outstanding contributions of Charles Nicolle to medical science by erecting a monument to his memory in Tunis, where his main work was carried out. Among his discoveries are the part played by the louse in the spread of exanthematic typhus fevers, the prophylaxis of measles by convalescent serum, the method of transmission of recurrent fever, inapparent infections, vaccination against *Hæmophilus ducreyi* and *Toxoplasma*.

A strong and representative committee, drawn from France and North Africa, has been formed to give effect to the proposal, with Dr. Paul Giroud, of the Pasteur Institute, Paris, as secretary. The undersigned are willing to accept contributions for transmission to Dr. Giroud.

Yours, etc.,

F. M. BURNET,
Walter and Eliza Hall Institute,
Royal Melbourne Hospital, Parkville Victoria.

E. H. DERRICK,
Queensland Institute of Medical Research, Herston Road, Valley,
Brisbane, Queensland.

September, 1948.

## WORLD STUDENT RELIEF.

SIR: The rehabilitation of university life in the countries that have been devastated by the war is one of the urgent tasks of this post-war period, and one which is of special concern to all university men and women. World Student Relief is assisting in this by aiding students in Europe and Asia with food, clothing, medical care, buildings, books and periodicals. This assistance is given to students irrespective of their country, race, colour or creed.

Many members of the medical profession throughout Australia have been generous in the support of this work, and this letter is written with the aim of extending this help. Contributions may be sent to the Treasurer, World Student Relief, 182, Collins Street, Melbourne, from whom further information or literature may be obtained.

Yours, etc.,

G. KEYS SMITH,
Chairman, Victorian Committee,
World Student Relief.

182, Collins Street,
Melbourne,
September 15, 1948.

# The Royal Australasian College of Physicians.

## ORDINARY MEETING.

THE ordinary meeting of the Royal Australasian College of Physicians will be held at Melbourne from October 21 to 23, 1948.

A pathological exhibit will be demonstrated in the library annexe of the Royal Australasian College of Surgeons at 11.30 a.m. on October 21. The first scientific session will be held in the lecture hall of the Royal Australasian College of Surgeons at 2.15 p.m. on October 21; the following papers will be read: "Experimental Rubella in Human Volunteers", by Professor F. M. Burnet; "The Neurogenic Component of Hypertension: A Comparison of the Effects of Tetra-Ethyl-Ammonium Bromide and a Rapidly Acting Barbiturate ('Seconal')", by Dr. J. L. Frew; "Coronary Insufficiency: A Clinical Review", by Ralph Whishaw; "The Continuous Intragastric Drip in the Preoperative Management of Congenital Hypertrophic Pyloric Stenosis", by Dr. M. Powell; "Blood Alcohol: A Study of its Post-Mortem Estimation and Medico-Legal Application", by Dr. K. Bowden.

An address will be delivered in the Public Lecture Theatre at the University of Melbourne by Ian Clunies Ross, D.V.Sc., on Thursday, October 21, at 8.30 p.m., on the subject of "Achievements in Biological Research of Interest to Medical Science".

A clinical meeting will take place on October 22 at 10 a.m. at the Royal Melbourne Hospital, and will be followed by a clinico-pathological meeting at 12.30 p.m. At the second scientific session which will be held in the Lecture Theatre of the Royal Australasian College of Surgeons at 2.30 p.m. on October 22 the following papers will be read: "The Significance of Prothrombin Accelerator in Normal Blood Coagulation", by Dr. Paul Fantl; "History and Incidence of Huntington's Chorea in Tasmania", by Dr. C. R. D. Brothers; "The Frequency, Complications and Management of Tracheo-Bronchial Tuberculosis", by Dr. J. E. Clarke; "Multiple Myeloma", by Dr. Wilfred Evans and Dr. G. A. W. Johnston.

On Saturday, October 23, 1948, a clinical demonstration will be held at 10 a.m. at Saint Vincent's Hospital.

# Naval, Military and Air Force.

## PRESENTATION TO MAJOR-GENERAL S. R. BURSTON.

DURING the recent Australasian Medical Congress (British Medical Association) at Perth, presentation of his portrait was made to Major-General S. R. Burston, C.B., C.B.E., D.S.O., V.D., former Director-General of Medical Services, Australian Military Forces, by medical officers who had served under him during the second World War.

The portrait was handed over to Brigadier D. M. McWhae on behalf of the subscribers by Brigadier W. W. S. Johnston, who explained that the gift was a spontaneous expression of admiration and affection felt for a great leader by his former officers, who realized that General Burston had personally shared their troubles and appreciated their problems in whatever circumstances of difficulty or danger they might be.

Brigadier McWhae then, as president of the congress and a former officer serving under General Burston, emphasized the complex problems that had beset their director-general in a series of campaigns extending over a tremendous field and involving great numbers under his command. He said that General Burston had proved himself a great leader, not only because of his long experience and administrative ability, but also because he possessed in a remarkable way many human qualities that gave him a very special place in the minds of those who served under him, and ensured the loyalty of his subordinates and the cooperation of his superiors. An important aspect of his policy was the importance he attached to the clinical aspects of the work of the corps, and that policy was a big factor in maintaining the interest of many medical officers in clinical medicine and surgery. In the history of the country no other Australian medical officer had had to carry such great responsibilities as General Burston. It was a great honour and pleasure to present to him a token of the esteem and friendship so deeply felt for him by his medical officers.

Major-General Burston expressed his deep appreciation of Brigadier McWhae's remarks. He emphasized that the great achievements of the Australian Army Medical Corps during the recent war were primarily the result of the team spirit and comradeship that existed throughout the corps. That, he considered, was to the greatest extent due to the high example set by senior officers serving with him. He would always be grateful to them for their loyal cooperation, friendship and wise counsel and for all they had done to help him and to make the memory of those strenuous and exacting years so happy. That so many of those who served with him so loyally should have wished to do him that great honour would remain one of his most cherished memories. He had been deeply moved by the afternoon's ceremony and found himself quite unable to express his feelings adequately. He could only deeply and sincerely thank them.

The portrait, a fine representation of Major-General Burston in uniform, was painted in oil by Mr. W. A. Dargie, and is at present hung in the hall of the British Medical Association (Victorian Branch), Albert Street, East Melbourne.

## APPOINTMENTS.

THE undermentioned appointments, changes et cetera have been promulgated in the *Commonwealth of Australia Gazette*, Number 135, of September 16, 1948.

### ROYAL AUSTRALIAN AIR FORCE.

*Citizen Air Force: Medical Branch.*

The appointment of Temporary Squadron Leader A. M. Beech (257693) is terminated on demobilization, 18th August, 1948.

*Reserve: Medical Branch.*

The following ex-officers are appointed to commissions with the temporary rank of Squadron Leader: John Joseph Nattrass (257665), 4th August, 1948, Alan Montgomery Beech (257693), 19th August, 1948.

## AN APPEAL.

THE Chinese Medical Association is rehabilitating its library and has requested certain numbers of THE MEDICAL JOURNAL OF AUSTRALIA to complete its files. Unfortunately there are no copies in stock of the numbers of the following dates: December 20, 1941; January 3, 1942; January 11, 1947. The Editor of THE MEDICAL JOURNAL OF AUSTRALIA would be grateful if any reader could let him have a copy of any of these numbers.

## Nominations and Elections.

THE undermentioned have applied for election as members of the New South Wales Branch of the British Medical Association:

Bulteau, Pamela, provisional registration, 1948 (Univ. Sydney), Base Hospital, Tamworth, New South Wales.

Greenberg, Audrey, M.B., B.S., 1947 (Univ. Sydney), 10, Cross Street, Waverley.

Dalgarno, Geoffrey James, M.B., B.S., 1947 (Univ. Sydney), *Flat 5, 198, Liverpool Road*, Enfield.

Allison, Alexander Arnold, provisional registration, 1948 (Univ. Sydney), Royal Prince Alfred Hospital, Camperdown.

Christian, Verlie Olive, provisional registration, 1948 (Univ. Sydney), Lithgow District Hospital, Lithgow, New South Wales.

## Medical Appointments.

Dr. R. F. May and Dr. C. H. Hembrow have been appointed members of the Masseurs Registration Board, in pursuance of the provisions of the *Masseurs Registration Act*, 1928, of Victoria.

## Diary for the Month.

OCT. 12.—New South Wales Branch, B.M.A.: Executive and Finance Committee, Organization and Science Committee.
OCT. 14.—Victorian Branch, B.M.A.: Organization Subcommittee.
OCT. 18.—Victorian Branch, B.M.A.: Finance, House and Library Subcommittee.
OCT. 19.—New South Wales Branch, B.M.A.: Medical Politics Committee.
OCT. 20.—Western Australian Branch, B.M.A.: General Meeting.
OCT. 21.—New South Wales Branch, B.M.A.: Clinical Meeting.
OCT. 21.—Victorian Branch, B.M.A.: Executive Meeting.
OCT. 22.—Queensland Branch, B.M.A.: Council Meeting.
OCT. 26.—New South Wales Branch, B.M.A.: Ethics Committee.
OCT. 27.—Victorian Branch, B.M.A.: Council Meeting.
OCT. 28.—New South Wales Branch, B.M.A.: Branch Meeting.
NOV. 2.—New South Wales Branch, B.M.A.: Organization and Science Committee.
NOV. 3.—Victorian Branch, B.M.A.: Branch Meeting.
NOV. 3.—Western Australian Branch, B.M.A.: Council Meeting.

## Medical Appointments: Important Notice.

MEDICAL PRACTITIONERS are requested not to apply for any appointment mentioned below without having first communicated with the Honorary Secretary of the Branch concerned, or with the Medical Secretary of the British Medical Association, Tavistock Square, London, W.C.1.

*New South Wales Branch* (Honorary Secretary, 135, Macquarie Street, Sydney): Australian Natives' Association; Ashfield and District United Friendly Societies' Dispensary; Balmain United Friendly Societies' Dispensary; Leichhardt and Petersham United Friendly Societies' Dispensary; Manchester Unity Medical and Dispensing Institute, Oxford Street, Sydney; North Sydney Friendly Societies' Dispensary Limited; People's Prudential Assurance Company Limited; Phœnix Mutual Provident Society.

*Victorian Branch* (Honorary Secretary, Medical Society Hall, East Melbourne): Associated Medical Services Limited; all Institutes or Medical Dispensaries; Australian Prudential Association, Proprietary, Limited; Federated Mutual Medical Benefit Society; Mutual National Provident Club; National Provident Association; Hospital or other appointments outside Victoria.

*Queensland Branch* (Honorary Secretary, B.M.A. House, 225, Wickham Terrace, Brisbane, B.17): Brisbane Associated Friendly Societies' Medical Institute; Bundaberg Medical Institute; Brisbane City Council (Medical Officer of Health). Members accepting LODGE appointments and those desiring to accept appointments to any COUNTRY HOSPITAL or position outside Australia are advised, in their own interests, to submit a copy of their Agreement to the Council before signing.

*South Australian Branch* (Honorary Secretary, 178, North Terrace, Adelaide): All Lodge appointments in South Australia; all Contract Practice appointments in South Australia.

*Western Australian Branch* (Honorary Secretary, 205, Saint George's Terrace, Perth): Wiluna Hospital; all Contract Practice appointments in Western Australia. All government appointments with the exception of those of the Department of Public Health.

## Editorial Notices.

MANUSCRIPTS forwarded to the office of this journal cannot under any circumstances be returned. Original articles forwarded for publication are understood to be offered to THE MEDICAL JOURNAL OF AUSTRALIA alone, unless the contrary be stated.

All communications should be addressed to the Editor, THE MEDICAL JOURNAL OF AUSTRALIA, The Printing House, Seamer Street, Glebe, New South Wales. (*Telephones: MW 2651-2.*)

Members and subscribers are requested to notify the Manager, THE MEDICAL JOURNAL OF AUSTRALIA, Seamer Street, Glebe, New South Wales, without delay, of any irregularity in the delivery of this journal. The management cannot accept any responsibility or recognize any claim arising out of non-receipt of journals unless such notification is received within one month.

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